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little calumet river corridor plan

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little calumet river corridor plan

july 1991

INDIANA DUNES NATIONAL LAKESHORE • INDIANA

UNITED STATES DEPARTMENT OF THE INTERIOR / NATIONAL PARK SERVICE
DENVER SERVICE CENTER

RECOMMENDED:

Dale B. Engquist — June 24, 1991
Superintendent — Date

Kenneth R. Raithel, Jr. — June 10, 1991
Manager, Central Team, Denver Service Center — Date

APPROVED:

Don H. Castleberry — July 1, 1991
Regional Director — Date

SUMMARY

This corridor plan presents methods to connect the East and West units of the national lakeshore and to provide better river access, parking, and recreational opportunities by way of the Burns Ditch and the east branch of the Little Calumet River. Another issue addressed is resource protection upstream along the Little Calumet River and Salt Creek.

HIKE/BIKE TRAILS

Methods to connect the diverse existing national lakeshore trails into one comprehensive trail system are also provided in this plan. Four new trail components will be established to accomplish this comprehensive trail network:

the east-west connection route

the east branch Little Calumet River hike/bike path

the US 12 hike/bike path

the east end bike route

The east-west connection route will connect the West Unit hike/bike trail at Hillcrest Road in Ogden Dunes (proposed in the *General Management Plan Amendment, West Unit Development Concept Plan, NPS 1991*) with the proposed east branch Little Calumet River hike/bike path at Old Crisman Road (proposed in this corridor plan).

The east branch Little Calumet River hike/bike path will extend east from the Old Crisman Road bridge to Goodfellow Camp, following the banks of the east branch Little Calumet River. The US 12 hike/bike path will be developed along the south side of the US 12 right-of-way, extending from the Indiana Highway 249 intersection with US 12 eastward to Indiana Highway 149 and Oak Hill Road. The east end bike route will provide a 13-mile designated bike route that will connect the East Unit of the national lakeshore with the Bailly Unit, using existing streets and rights-of-way.

RIVER ACCESS SITES

This corridor plan also recommends five new river access sites to provide better river access, parking, and recreational opportunities. These access points will have parking, toilet, and trash facilities, as well as connections to trail systems and recreation sites along the Little Calumet River. These five sites will be at Howe Road river access, Bailly Homestead canoe landing, Indiana Highway 149 river access, Boo Road river access, and Burns Ditch river access.

CONNECTIONS TO OTHER RECREATIONAL FACILITIES

Future trail links are identified that may be developed to connect the national lakeshore with local, county, and state parks throughout northwestern Indiana by way of stream corridors and abandoned railroad rights-of-way. These potential trail links would follow along the Burns Ditch, the abandoned rights-of-way of the Norfolk and Southern and the Elgin, Joliet, and Eastern railroads, and the Salt Creek corridor.

RIVER AND LAND USE MANAGEMENT

The National Park Service has no jurisdiction over lands upstream of the national lakeshore boundary. However, stream corridor protection measures that could be used to help protect vacant lands have been identified.

IMPACTS

Based on the environmental analysis in the draft *Little Calumet River Corridor Plan/Environmental Assessment* and public and agency comment, it has been determined that this plan will not significantly affect the quality of the human environment. Therefore, a finding of no significant impact is appended to this plan (see appendix A) and an environmental impact statement will not be prepared.

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PURPOSE OF AND NEED FOR THE PLAN

INTRODUCTION

Indiana Dunes National Lakeshore, designated as a national lakeshore in 1966 (Public Law 89-761), was one of the first areas proposed for national lakeshore status. The national lakeshore is about 35 miles southeast of Chicago, Illinois, in the northwestern counties of Lake, Porter, and LaPorte in Indiana. It contains about 14,000 acres, including some 15 miles of Lake Michigan shoreline, and runs for nearly 25 miles along the southern end of Lake Michigan between Michigan City on the east and Gary, Indiana, on the west. Miles of beaches, sand dunes, wetlands, and woodland forests combine to make it an area of fragile and significant natural resources in an urban/industrial region.

In 1980, Indiana Dunes National Lakeshore was dedicated to the memory of Paul H. Douglas in grateful recognition of his leadership in the effort to protect, preserve, and enhance the natural, scientific, historic, and recreational value of the lakeshore for the use, enjoyment, and edification of present and future generations. The West Unit of the national lakeshore was designated as the Paul H. Douglas Ecological and Recreational Unit. For practical purposes, this unit will continue to be referred to as the West Unit in this document.

PURPOSE OF THE PLAN

This plan presents methods to connect the East and West units of the national lakeshore and to provide better river access, parking, and recreational opportunities by way of the east branch of the Little Calumet River and Burns Ditch. An assessment of the environmental consequences of these actions can be found in the *Draft Little Calumet River Corridor Plan and Environmental Assessment* (NPS 1990). Another issue addressed in this plan is resource protection upstream along the Little Calumet River and Salt Creek.

The national lakeshore currently has a limited trail system along the Little Calumet River in the Bailly Unit. The East and West units of the national lakeshore are separated by the Little Calumet River, the Portage/Burns Waterway, and the Burns Harbor industrial complex. The 1986 amendments to the national lakeshore legislation directed the secretary of the interior to "conduct a study regarding the options available for linking the portions of the national lakeshore that are divided by the Little Calumet River and Portage/Burns Waterway so as to coordinate the management and recreational use of the national lakeshore." The need to connect the East and West units of the national lakeshore by a trail system has been one of the long-term goals for the development of the national lakeshore since its establishment in 1966.

Public interest in physically linking the East and West units by a trail or other means and in providing opportunities to increase the recreational potential of the Little Calumet River for fishing and canoeing prompted Congress to expand the national lakeshore boundary. In 1976, 30 acres and in 1986, 200 acres of land along the Little Calumet and adjoining Salt Creek were added to the national lakeshore. As a result, since the national lakeshore was established, the boundary has been extended approximately 3.5 miles west along the Little Calumet River to a point east of Indiana Highway 249 (IN 249).

Indiana Dunes National Lakeshore is made up of nine separate units of undeveloped beach, dune, and wetland areas that are surrounded by several industrial complexes. The Little Calumet River corridor is the only undeveloped natural area that a trail system could follow to link the disparate national lakeshore units. Although some of the river corridor is outside the national lakeshore boundary, public support and the possibilities for linking with other recreation areas and trails and with existing National Park Service (NPS) trails made this the most cost-effective and viable option for establishing a trail system.

OBJECTIVES

The following objectives were established for this plan:

Design a trail system along the entire length of the Little Calumet River to connect the East and West units of the national lakeshore.

Provide for fishing and canoe access on the east and west branches of the Little Calumet River.

Review stream corridor protection measures for lands upstream of the national lakeshore.

Connect other public lands through regional recreational trail systems.

STUDY AREA

The Little Calumet River is the principal river flowing through Indiana Dunes National Lakeshore (see Region map) and has been identified as a significant resource within the national lakeshore (NPS 1988b). The river consists of the east and west branches and contains 83 miles of tributary streams, including Salt, Coffee, Sand, and Reynolds creeks and several drainage ditches (NPS 1986).

The study area includes the Little Calumet River and the Portage/Burns Waterway, extending from Lake Michigan upstream to US 20 along the east branch of the Little Calumet River and along Salt Creek. The study area also includes the Burns Ditch from the confluence with the Portage/Burns Waterway upstream to I-65 (see Location map). Although not specifically within the study area, the regions upstream of US 20 on the east branch of the Little Calumet River and Salt Creek and upstream of I-65 on the west branch of the Little Calumet River are addressed with regard to stream protection measures and as stream corridor linkages to other recreation areas.

The east branch of the Little Calumet River originates in LaPorte County, entering the Heron Rookery Unit of the national lakeshore on the east (at County Road 600 east) and flowing 1.5 miles through the Heron Rookery Unit. Upon leaving the Heron Rookery Unit (at County Road 450 east), the river heads westward through a channelized section (Kemper Ditch). The river then meanders westward through the towns of Chesterton and Porter and reenters the national lakeshore at US 20 and Mineral Springs Road to flow another 5.7 miles through the Bailly Unit. The river exits the national lakeshore about ½ mile downstream from its confluence with Salt Creek. From this point the river is channelized to its confluence with the Burns Ditch.

The west branch of the river begins in Illinois and travels east through Lake County. Deep River and the west branch of the Little Calumet River join just east of I-65 to form the channelized Burns Ditch, which continues east to the

INDIANA DUNES NATIONAL LAKESHORE

URBAN DEVELOPMENT AREAS

MAJOR PUBLIC AND PRIVATE PARK AND OTHER OPEN SPACE

NORTH

REGION

INDIANA DUNES NATIONAL LAKESHORE

LAKE, PORTER AND LA PORTE COUNTIES • INDIANA

UNITED STATES DEPARTMENT OF THE INTERIOR / NATIONAL PARK SERVICE

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Portage/Burns Waterway and Lake Michigan.

RELATED STUDIES AND ONGOING PROJECTS

Studies

An objective of the NPS 1980 *General Management Plan* for the national lakeshore was to study the need for a trail linking the East and West units. (The concept has been supported by many local and regional interest groups and adjacent communities.) The addition of acreage along the Little Calumet River corridor after the *General Management Plan* was written has made it possible to plan more realistically for meeting this objective. The *General Management Plan* proposed extensive trail systems that would tie into Indiana Dunes State Park and other regional recreation facilities and connect all units of the national lakeshore. Because the East and West units of the national lakeshore were separated by a wide gap of privately owned lands, the *General Management Plan* proposed a cooperative trail alignment across the private lands to achieve the trail link.

The Park Service's 1983 *Transportation Study* proposed a number of access and circulation changes for the national lakeshore. This *Little Calumet River Corridor Plan* incorporates many of the access and circulation changes recommended in the 1983 study.

The NPS 1984 *Trail Plan* provided a general guide for trail development within the national lakeshore. The plan also identified trail development and trail improvements that require cooperative efforts between the National Park Service and several local and state governments. This *Little Calumet River Corridor Plan* incorporates, revises, and adds trails f the 1984 study.

The NPS 1986 *Little Calumet River Management Plan* addressed resource management and visitor use issues alo the Little Calumet River within the Bail Unit of the national lakeshore. This *Litt Calumet River Corridor Plan* incorporat river use management recommendatio for canoeing, hiking, and fishing from t 1986 plan.

The NPS *US 12 Scenic Road Feasibili Study* evaluates the feasibility of designating and managing all or portio of US 12 from Michigan City to Gary a scenic road. Traffic and highway safety intersection design, possible design modifications along the scenic corridor, and impacts of scenic road designation on local residents, tourists, local businesses, industry, and trucking companies are addressed in the study. US 12 were to be developed as a scer road, it would provide a recreational highway to connect the national lakesh units and other regional recreation area

The NPS *General Management Plan Amendment and West Unit Developmer Concept Plan* addresses issues affectin the West Unit, including access to Wes Beach, facility development, visitor use, boundary adjustments, and use of NPS lands. The West Unit plan is following t overall direction of the 1980 *General Management Plan.* Trails proposed in th *Little Calumet River Corridor Plan* will connect with the trails proposed in the West Unit plan.

Other Related Projects

The Little Calumet River Basin Commission was created in 1971 to pla and coordinate efforts that would relieve the severe flooding along the Little Calumet River in Lake and Porter

MAPS

TRANSPOSED TO

END OF VOLUME

counties. The Little Calumet River Basin Development Commission, a different commission, was created by state statute in 1980 to provide nonfederal sponsorship and funding for the federal flood control, recreation, and navigation improvements along the Little Calumet River in Lake and Porter counties. These two commissions are implementing flood control improvements on the west branch of the Little Calumet River west of Broadway in Gary. Responsibilities of the commissions include provision of recreational facilities.

The Little Calumet River Basin Development Commission designed and funded the breakwater improvements at the mouth of the Portage/Burns Waterway on Lake Michigan and included provisions for fishing from the breakwater. As part of the recreation component, the commission has acquired a 300-acre tract (referred to as the proposed Little Calumet River Basin Development Commission recreation area on the Existing Facilities map) on the north bank of the west branch of the Little Calumet River in Gary, adjacent to Lake Station. The commission is also in the process of developing a 100-slip marina between the IN 249 spur and the Portage/Burns Waterway just south of US 12. One long-term goal is a trail system along the Burns Ditch.

Bethlehem Steel has submitted a proposal to the Indiana Department of Natural Resources to construct a 2,000-foot fishway to connect Salt Creek with the Little Calumet River to provide a cool-water route for fish to bypass the Bethlehem Steel warm-water discharge. This fishway would begin on Salt Creek just upstream of the confluence with the Little Calumet River, pass east-northeast across a narrow point between Salt Creek and the Little Calumet, and then join the Little Calumet River upstream of the warm-water discharge. Construction access and river user access in the future would be by a continuation of Boo Road to the north. This route could provide access for hiking, fishing, and boating.

The Lake County Parks and Recreation Department manages 10 park areas with a total of more than 3,600 acres of open space. Parks that are nearby and related to the national lakeshore are Deep River County Park (upstream from the Deep River/West Branch Little Calumet River confluence) and Lake Etta (east of Burr Street in Gary). The parks department is seeking ways to take advantage of the abandoned railroad corridors in Lake County to connect recreation areas and provide hiking and biking trails. Abandoned railroad corridors include the former Elgin, Joliet, and Eastern, and the Norfolk and Southern corridors.

AFFECTED ENVIRONMENT

REGIONAL OVERVIEW

Indiana Dunes National Lakeshore lies within the northwestern Indiana industrial-urban complex. Within and adjacent to the national lakeshore's boundary are residential communities, commercial uses, open rural areas, steel mills, light industry, and agricultural lands. Natural wetlands, dune bluffs and ridge complexes, successional vegetation, climax oak forests, and long beaches typify the visual qualities of the national lakeshore. Also within the national lakeshore area is a complex system of county, state, and interstate roads serving local residential and heavy industrial traffic. Numerous railroads carrying manufactured products and commuter and interstate passengers also traverse the national lakeshore.

VISITOR USE/SOCIOECONOMIC ENVIRONMENT

Visitor Use

Indiana Dunes National Lakeshore is a popular destination for recreationists from metropolitan Chicago, northern Indiana, the Midwest, and the nation. Visitation to the national lakeshore has grown steadily since its designation in 1966. In 1988, recreational use of the national lakeshore reached an all-time high of over 1.88 million people. Since 1981, visitation to Indiana Dunes National Lakeshore has increased by an average of 8.9 percent per year. The total increase in annual visitation between 1981 and 1988 has been 47.8 percent. Table 1 illustrates recreational visits to the national lakeshore for the 1980s.

TABLE 1: RECREATIONAL VISITS, 1981-1988

Year	Visitors	Year	Visitors
1981	1,023,400	1985	1,800,300
1982	1,066,600	1986	1,676,600
1983	1,510,600	1987	1,576,200
1984	1,560,400	1988	1,885,300

About 50 percent of the annual visitation to the national lakeshore is concentrated in June, July, and August. Over 72 percent of the total annual use occurs between May and September. Only 6 percent of the annual use occurs between December and February. July is the peak-use month, with about 16 percent of the annual visitation.

Visitors to Indiana Dunes can participate in a variety of recreation pursuits. Water-based activities such as swimming, fishing, and boating dominate the warmer months, while cross-country skiing and snowshoeing are prevalent in the winter. Hiking, dune exploration, and nature study are popular year-round.

The east branch of the Little Calumet River provides national lakeshore visitors with opportunities for different types of river recreation. Two sections of the east branch, totaling about 7.2 miles, are within national lakeshore boundaries.

The west branch of the Little Calumet River and the Burns Ditch, although outside national lakeshore boundaries, provide additional opportunities for water recreation. The west branch flows eastward from Illinois through Lake County before joining the Deep River to form the Burns Ditch, which continues east to the Portage/Burns Waterway. The Burns Ditch and westernmost segment of the east branch are channelized and lined

by a number of boat slips. Powerboaters docking at these boat slips can enter Lake Michigan via the Portage/Burns Waterway.

There is little existing data on the number of recreationists who use the east branch of the Little Calumet River. However, major uses of the corridor include canoeing, fishing, hiking, cross-country skiing, and bird-watching. Although the river is relatively slow-flowing and has been designated by the U.S. Army Corps of Engineers as a navigable waterway, not all of the east branch is suited for novice canoeists. Numerous snags and logjams require good maneuvering skills and frequent portaging. Low water levels expose logs and make it difficult for canoeists because of frequent portaging. The streambanks along the lower portion of the east branch are quite steep, which makes portaging difficult. Additionally, during high-water periods, the last 7,000 feet of the east branch can develop potentially threatening whitewater conditions that may be difficult for inexperienced canoeists to negotiate. The part of the east branch from Howe Road to IN 149 is generally the safest and most appealing segment for novice canoeists.

There are no "designated and maintained" river access points on the Little Calumet River within national lakeshore boundaries. River recreationists currently access the stream at road right-of-way crossings and other unimproved areas.

The 2.4-mile Little Calumet Trail, adjacent to the Little Calumet River, is maintained by the national lakeshore staff for hiking, skiing, and interpretation. This trail connects with other trails in the Bailly Unit, and it can be accessed by a trailhead at the Bailly/Chellberg visitor center and at informal pulloffs along Howe Road. The trail features a footbridge across the stream and a boardwalk that crosses the adjoining wetlands.

Socioeconomic Conditions

Lake and Porter counties, like the rest of northwestern Indiana, have experienced substantial demographic and economic changes during the 1980s. A major contributing factor to these changes was an economic recession in the early 1980s that caused sweeping changes in the heavy industries that dominate the local economy. A decline in the automobile industry caused a parallel drop in the demand for steel and related products. This resulted in the loss of many jobs in the region. At the same time, many steel mills and factories began to streamline operations to remain economically viable: the installation of highly efficient automated production systems further reduced the need for manual labor in many plants. Thus, many individuals and families were forced to leave the area to find work.

The loss in population in some parts of the counties has been partially offset by an in-migration of people who are seekin alternatives to the urban lifestyle of metropolitan Chicago. Many individuals who are employed in the Chicago area have moved to northwestern Indiana but still commute to work in the city.

Table 2 illustrates population dynamics o Lake and Porter counties for the years 1970-1987. Population projections for th year 2000 are also included in the table Referring to the table, it is possible to determine that the population of Lake County has declined by over 65,000 people (11.9 percent) between 1970 an 1987. Most of this loss is due to out-migration. During the same years, however, Porter County has experience a substantial (41.3 percent) gain in population. This gain is primarily due to

TABLE 2: POPULATION DYNAMICS: LAKE & PORTER COUNTIES, INDIANA – 1970-2000

County	1970	1980	Change 1970-1980	Estimate 1987	Change 1980-1987	Projected 2000
Lake	546,253	522,965	-4.3%	481,200	-8.0%	473,863
Porter	87,114	119,816	37.5%	123,100	2.7%	133,710

births-over-deaths, as net migration for the county has been negative since 1970. The recession of the early 1980s impacted the population dynamics of Porter County, as growth slowed from 37.5 percent (1970-1980) to 2.7 percent (1980-1987).

The recent trends in population for northwestern Indiana are expected to continue through the year 2000. Lake County is projected to lose another 1.5 percent of its residents between 1987 and 2000. Porter County's population is expected to grow by another 8.6 percent during the same period.

In 1985 the average per capita income (PCI) for Lake County was $9,737 and for Porter County was $10,778. The statewide PCI for 1985 was $9,978. In 1980, 9.2 percent of Lake County families and 3.8 percent of Porter County families were considered to have incomes below the poverty level.

Despite the downturn in heavy industry during the early 1980s, manufacturing remains the mainstay of the local economy. Table 3 summarizes employment in the Gary-Hammond Primary Metropolitan Statistical Area (PMSA) for the year 1987. The Gary-Hammond PMSA consists of Lake and Porter counties. Over 25 percent of workers in the PMSA were employed in manufacturing jobs during 1987 (although the total number of workers in this sector was down about 48 percent from 1979). Another 21 percent of workers in the PMSA were employed in the service sector, while about 20 percent were employed in retail trade. The service sector has experienced the most growth over the past decade, with a 27 percent increase in the total number of jobs.

The largest employers in the PMSA are Inland Steel and USX Corporation. Inland Steel employs around 14,800 individuals (down from 21,000 in the mid 1970s) and USX Corporation employs about 7,500 (down from 26,000 in the mid 1970s). Other major employers in the PMSA include Bethlehem Steel (6,400 employees), LTV Steel (4,600), National Steel (1,700), and Amoco Oil Company (1,600).

TABLE 3: NONAGRICULTURAL WAGE & SALARY EMPLOYMENT GARY-HAMMOND PRIMARY METROPOLITAN STATISTICAL AREA (1987)

Sector	Employees	% of Labor Force
Manufacturing	53,900	25.1
Nonmanufacturing	161,000	74.9

Unemployment in the Gary-Hammond PMSA has declined substantially since the recession of the early 1980s. Current (July 1989) unemployment is 4.2 percent in Lake County and 2.2 percent in Porter County. Unemployment in these counties in 1983 was 15.8 percent and 14.2 percent, respectively. Current statewide unemployment in Indiana is 3.9 percent.

NATURAL RESOURCES

Climate

The climate of the Indiana Dunes National Lakeshore area is characterized by distinct weather patterns every two to three days. The influence of Lake Michigan tends to modify the extremes of warm and cold. Typical summer days are warm and humid; July is the warmest month, with a mean temperature in the mid 70s. Winters are cold; January is the coldest month, with a mean temperature in the mid 20s.

Mean annual precipitation in the national lakeshore ranges vastly, from about 31 inches in the Hammond area to 48 inches at LaPorte. The mean monthly precipitation is generally the highest from April through July. Heavy rains resulting in bank-full flows generally occur from March through May but are also common in December, February, June, and July.

Sunshine is an important factor to recreational activity within the national lakeshore. The national lakeshore area averages between 100 and 120 clear days per year, with 10 hours of sunshine daily in the summer.

Winds in the dunes area are generally from the west to south. Localized lake effects result in warm lake breezes as well as localized heavy winter snows. The lake-effect winds blow out of the north, inland. Differential heating of land and water along the Lake Michigan shoreline results in onshore winds during the day and offshore winds at night.

Topography/Soils

Most of the national lakeshore lies within the Calumet lacustrine plain. South of th present shoreline lie the Tolleston, Calumet, and Glenwood stages of shoreline. The ancient dunes and wetlands associated with the Tolleston and Calumet shorelines account for mar of the topographic features along the southern boundary of the national lakeshore. The soils are a direct result o the geologic history of the area. Clay-ric soils occur in the southern portion of the national lakeshore and are underlain by glacial moraine and lake deposits.

The Soil Conservation Service (SCS) ha published soil surveys for Lake and Porter counties, which include the Little Calumet River corridor area. Topograph characteristics of the river corridor indicate areas dominated by nearly leve slopes. The east branch is a meanderin low-gradient, sand-bedded stream. The east branch and its floodplain have cut to 25 feet into late Pleistocene to Holocene lacustrine sediments, which a composed of silt and intermixed with fin sand and clay and little coarse material (NPS 1986). Soils in the east branch o the Little Calumet River on the terraced areas adjacent to the floodplain include the Whitaker-Milford-Del Rey soil association. These soils are somewhat poorly drained loamy and silty soils on lake plains, terraces, and outwash plain The floodplain area is comprised of poo drained soils with slow surface runoff.

Soils in the west branch of the Little Calumet River corridor consist of Oakv Maumee-Brems and Maumee-Bono-Warners associations. The Oakville-Maumee-Brems soils are nearly level t

steep and are well-drained to poorly drained sandy soils that are on outwash plains, lake plains, beach ridges, and sand dunes. A complete soil description of the study area is available in the published SCS Lake and Porter County soil surveys (SCS 1972 and 1981).

Vegetation

The vegetation of Indiana Dunes is one of its most significant features and represents one of the primary reasons for its establishment (NPS 1987). Detailed vegetation surveys and inventories conducted within the national lakeshore since the early 1900s provide baseline data. The lakeshore's vascular plant flora is fairly well known. A 1989 revision of the national lakeshore's vegetation (plant community) classification system and associated Geographic Information System (GIS) mapping has resulted in a new comprehensive vegetation data base. The Land Use/Land Cover map identifies the vegetation types occurring within the Little Calumet River corridor and the general national lakeshore area. Major vegetation communities are dune, moraine, wetlands, and backdune uplands.

The national lakeshore displays diverse vegetation, represented by more than 1,130 different species of native vascular plants. The vegetation includes plant associations of the eastern deciduous forest, boreal forest, Atlantic coastal plain, and prairie species. Brief descriptions of the general plant communities/succession that have developed at Indiana Dunes National Lakeshore are given below.

Upland Forest – Upland forests grow on well-drained areas that are rarely, if ever, flooded or covered with standing water. These forests are found on dunes or the uplands of the glacial moraine. The tree, shrub, and herb species found in these forests are often completely different from those found in lowland forests.

Lowland Forest – Lowland forests grow in areas that are periodically flooded, such as river and stream floodplains and drainage valleys, or in areas where standing water is present year-round. Lowland forests often border marshes, ponds, and shallow lakes and may cover extensive areas between two series of dune ridges. Low swales between forested dunes are usually wet and contain lowland forest.

Terrestrial Shrub – Terrestrial shrub thickets usually have formed as a result of clearing forests or abandoning farmland (on the moraine) or suppressing fires (in the dunes). Shrub thickets on the moraine could be considered an intermediate stage between an old field and a young forest. On the dunes they are intermediate between open oak savannas and closed oak forests.

Prairie – A prairie is a grass- and herb-dominated community with a much higher diversity of plants than a foredune community. Prairies are found in areas that have never been disturbed by sand mining and that show no evidence of having recently been an active dune or blowout. They are generally older and more well developed than foredune communities. True prairies at Indiana Dunes are found only in the dunes and are composed of native species rather than Eurasian weeds or old field species. Prairie flora make up the herb component of the savannas.

Wetland Shrub – Wetland shrub thickets grow in areas that have standing water or wet soils year-round. They usually contain different shrub species than a terrestrial shrubland.

Wetland shrub thickets often occur as clumps or islands of shrubs scattered in the middle of marshes or along their edges. If shrub cover is less than 50 percent, the area is considered marsh. Around the Indiana Dunes, many drained marshes are now becoming wetland shrub thickets as shrubs and young trees invade.

Marsh – Herb-dominated wetlands almost always contain abundant stands of cattails or giant reed grass and sedges. Marshes are most extensive in the low-lying wetlands between two series of dune ridges, although small pockets of marsh may occur in the swales between two dunes, along river floodplains, or around pond edges.

The vegetation along the east branch of the Little Calumet River has been described as bottom forest in the floodplain and mesophytic forest in the uplands (NPS 1986). The bottomland vegetation is characterized by flora adapted to regular, frequent spring flooding interspersed with dry summer conditions. The forest overstory consists primarily of silver maple, ash, red elm, cottonwood, and black willow. Understory ground cover includes bulbous cress, gray sedge, wild chervil, false mermaid, and striped white violet.

The mesophytic forest is confined mostly to the steep slopes of ravines and bluffs and along the edges of agricultural or other artificial clearings. Common overstory trees are sugar maple, red maple, blue beech, American beech, and red oak. Understory species are false rue, anemone, bishops cap, broad-leafed goldenrod, red trillium, jack-in-the-pulpit, panicled aster, nodding fescue, sharp-lobed hepatica, bloodroot, and downy yellow violet.

The only remaining example of a presettlement bottomland forest at the national lakeshore is within the Little Calumet River corridor in the vicinity Howe Road. It is characterized by bo elder, red elm, swamp white oak, and black willow. Vascular aquatic plants not common in the river.

Wildlife and Fish

Wildlife species within the national lakeshore are diverse due to the var of habitats. Many terrestrial species birds, reptiles, amphibians, mammals insects can be observed in the Little Calumet River corridor. Birdlife inclu song birds, ducks, and great blue he Snakes, frogs, and turtles are comm along the river. Bottomland mammal include white-tailed deer, beaver, ra opossum, woodchuck, muskrat, wea mink, vole, and bat. All terrestrial sp appear to be in good condition, with stable populations. Studies of white- deer are being conducted to determ their general health.

Aquatic species found within the riv corridor vary from invertebrates to f Invertebrate populations include scu sow bugs, crayfish, damselflies, mi mayflies, water boatmen, water sco water striders, giant water bugs, an diving beetles. All major game fish the river are exotics. Important gam species include steelhead (rainbow brown trout, coho salmon, and chi salmon. The brown trout are a self-sustaining, naturally reproducin population primarily in the east bra river segment by the Porter/LaPort county line (NPS 1986). Because steelhead trout and salmon (coho chinook) have no successful natur reproduction in the southern Lake Michigan and Indiana Dunes Natio Lakeshore streams, the Indiana Department of Natural Resources annually stocks yearling salmon a steelhead trout in the spring at th

149 bridge. The average annual stocking levels are about 165,000 steelhead, 89,000 coho, and 125,000 chinook (IDNR 1989b). Additional salmonid fisheries spawning and stocking information is available from the IDNR (IDNR 1988). Open fishing season runs from June 15 to March 15. Nongame native fish consist of buffalo, white sucker, carp, creek chub, johnny darter, blunt nose minnow, and green sunfish.

The Little Calumet River is a designated salmonid stream managed and regulated by the IDNR as a fishery (see "Water Resources" section). A draft memorandum of understanding (MOU) between the IDNR and the Park Service on the Little Calumet within the national lakeshore boundaries is currently being reviewed. The MOU establishes the fishery management of the Little Calumet River by the IDNR.

A creel survey (boat, shore, and stream) of fishing harvest for the Little Calumet River, Salt Creek, and Trail Creek was completed in 1988 by the IDNR Fisheries Division. Results of the creel survey indicate a fish harvest of 76 percent steelhead, 5 percent coho, 11 percent chinook, and 8 percent other (IDNR 1989a). About 53 percent of the fish caught were harvested from the Little Calumet River and Salt Creek tributaries. Overall population trends from the 1985-1988 creel survey of steelhead, coho, and chinook vary. Steelhead stream harvest is primarily stable and steady; coho stream harvest is gradually declining; and chinook stream harvest is stable (IDNR 1989a). Additional salmonid fisheries information is available from the IDNR Fish and Wildlife Division (IDNR 1989a and 1989b).

The Salt Creek tributary to the Little Calumet River also provides a local fishery with major game fish including steelhead, coho, and chinook. Nongame species are bullhead, carp, and white sucker.

Threatened and Endangered Species

State-listed threatened and endangered flora species occur in the Little Calumet River corridor area and Salt Creek drainages at Indiana Dunes National Lakeshore. (See appendix B for a list of state-protected species known or likely to occur in the river corridor.) All state-listed threatened, endangered, or rare plant species are not legally protected by state statutes. The federally threatened sand thistle varies in local distribution, from frequent to scattered to rare. Several federally listed category 2 (C2) candidate plant species are also present – including the scattered sand fragrant sumac and rare fame flower.

Several state-listed endangered, threatened, and rare plant species may be within the river corridor. Field studies on the status of Indiana endangered, threatened, and special concern species (Bowles 1984 and 1988a) support the arguments that the originally diverse flora of the Indiana Dunes National Lakeshore has, in part, declined because of fire protection measures. The studies show that most species within the national lakeshore are found to be in a state of decline (NPS 1987). It has been estimated that the number of plant species thought to be extirpated from the state has more than tripled in the past century primarily due to natural habitat destruction.

Various animal species protected by the state of Indiana and state-listed as endangered, threatened, or rare are within the Little Calumet River/Salt Creek area. All vertebrate and invertebrate fauna species are protected by state authority (IC14-2-3-3, IC14-3-2-3, and IC14-3-3-7) and under state administrative codes

(310IAC3-3-6) and are enforced by the IDNR, Fish and Wildlife Division.

Several federally listed threatened and endangered candidate animals are known to occur or potentially occur in the Little Calumet River corridor. The federally endangered Indiana bat (*Myotis sodalis*), while not having been observed at Indiana Dunes National Lakeshore, has the potential to exist in habitat along the Little Calumet River. The C2 eastern massassauga snake (*Sistrurus catenatus*) has been recorded recently as occurring in Lake and Porter counties, and therefore may be in the river corridor area.

Water Resources/Quality

Within the study area, major surface water resources are the east and west branches of the Little Calumet River, Salt Creek, and the Portage/Burns Waterway. Much of the hydrological processes in and surrounding the national lakeshore have been significantly altered during agricultural and industrial development of the area, due to channelization, filling of wetlands, ditching, dikes, and dewatering. A water resources baseline inventory and assessment has been completed for the national lakeshore (NPS, Dolak 1985).

The national lakeshore overlies an extensive groundwater reservoir. The general groundwater gradient is towards Lake Michigan. Groundwater gradients can be and are localized in the national lakeshore and surrounding areas. The groundwater table generally varies from 0 to 45 feet below the surface (NPS 1979).

The water quality of Indiana Dunes water resources is important for maintaining the aquatic and wetland communities and providing for the health and safety of recreational visitors. Indiana Dunes National Lakeshore has two water quality programs - beach bacteria monitoring and stream monitoring. Under the st monitoring program, nine sites on th Little Calumet River (main, east, and branches, IN 149, Howe Road, Shac Mobile Home Court, warm-water discharge site, Salt Creek, and Hero Rookery) are sampled and monitore monthly for fecal coliform, conductan temperature, and dissolved oxygen l

During 1988, water quality monitorin the fecal coliform levels in the Little Calumet River exceeded the Indiana Department of Environmental Management (IDEM) standards for v body contact approximately 53 perce the time. Also during this time, fecal coliform levels for partial body conta exceeded the IDEM standards less percent of the time.

Conductance levels for the east bra the Little Calumet River are within t normal background levels. Salinity (levels are low. There is a slight incr in salinity downstream from the Shadyside Mobile Home Court and slight decrease in salinity downstrea from the Bethlehem Steel warm-wa discharge site.

Temperature levels along the east l generally follow ambient temperatur that is, normal conditions except at warm-water discharge site. Here th normally significantly higher than st temperature immediately upstream.

The east branch of the Little Calum River upstream of the Wagner Roa bridge has been designated by the of Indiana as a natural spawning, r or imprinting area for salmonid fish Also, downstream from the Wagne bridge through the lakeshore and i Portage/Burns Waterway and empt into Lake Michigan, the river is designated a migration route for sa fishes. As such, higher water quali standards are established and enfo

by the IDEM. The higher water quality standards resulting from this designation are the basis for issuance of wastewater permits by the IDEM Stream Pollution Control Board. Currently, the amount of pollutants contained in a waste discharge must be limited to ensure that downstream water quality standards are met.

Runoff to the Little Calumet River is quite rapid, with peak flows occurring 18 hours or less after intense rains (NPS 1986). The U.S. Geological Survey (USGS) maintains a water gauging station in the vicinity of Mineral Springs Road and US 20. Discharge rates from 1945-1983 indicate an average and median flow of 74.3 cubic feet per second (cfs) and 46 cfs, respectively. Maximum flows have reached 3,110 cfs, with a minimum flow of 17 cfs.

Bethlehem Steel's warm-water discharge is causing increased temperatures at its confluence with the Little Calumet River. Bethlehem Steel has applied for and received a national pollutant discharge elimination system permit (effective 10-1-88) from the IDEM. Their effluent discharges are being monitored and are in compliance with the permit requirements. Salmonid fish moving upstream or downstream tend to avoid the portion of the river near the warm-water discharge.

Dissolved oxygen levels are generally within the range necessary to support salmonid fish, but infrequently; they fall below generally accepted critical oxygen minima (>5 parts per million oxygen). The best general quality salmonid waters appear in and around the Heron Rookery sampling stations.

The waters of the east branch of the Little Calumet River are of the calcium bicarbonate type. Elevated concentrations of sodium, chloride, and various forms of nitrogen and phosphorus are in the river. The fecal coliform levels commonly exceed the IDEM standards for whole body contact, and partial body contact limits are also exceeded at times.

The general water quality of the Salt Creek is moderate to good and capable of sustaining a viable salmonid fishery. Fecal coliform levels for total body contact is usually above the acceptable IDEM standards, and fecal coliform levels are well within the acceptable IDEM standards for partial body contact. Conductance levels are within the range expected for this watershed, and they do not exceed the state IDEM standards relating to total dissolved solids. Temperature levels in Salt Creek are within normal ranges. The oxygen levels are slightly below to full saturation. There is no evidence of excessive organic loading.

Overall, the west branch of the Little Calumet River is generally accepted as a highly degraded stream incapable of supporting a diverse assemblage of aquatic life (Richard Whitman, Chief Scientist, Indiana Dunes National Lakeshore, conversation with author, July 1989). The west branch contains higher salt concentrations caused by nonpoint urban sources. With neighboring industrial, agricultural, and residential activities present, major water pollution concerns include road salt contamination, parking lot and highway runoff, industrial landfill contamination, sewage and industrial effluent outfalls, treatment ponds, and agricultural runoff. All of the pollution sources are outside NPS jurisdiction.

Baseline water quality and water chemistry characteristics have been established for some areas within the national lakeshore. The USGS has in the past, under an annual contract, undertaken a water quality monitoring

program for Indiana Dunes National Lakeshore. In fiscal year 1990, the national lakeshore began its own long-term periodic water quality monitoring program.

Past research and studies indicate high levels of some chemicals, such as PCBs and nitrates, in some surface water and groundwater within the national lakeshore. The USGS has found high levels of heavy metals and some increased arsenic and boron levels in the past.

Floodplains/Wetlands

Numerous water channels and dried-up oxbows lie within the floodplain. The floodplain averages 600 to 1,800 feet wide (NPS 1986). The Howe Road bridge and footbridge and Little Calumet River Trail (in the Bailly Unit) are the only structures within the 100-year floodplain in the river corridor and the national lakeshore. The 100-year flood levels for the national lakeshore are based on county flood insurance rate maps and flood insurance studies conducted by the Federal Emergency Management Agency. These levels are identified on the Floodplains and Wetlands map, along with wetland locations within the Little Calumet/Salt Creek corridors.

The flooding period along the Little Calumet River generally occurs from April to June and from mid to late December. Floods occurring in the river corridor are based on an average time lag of six hours between the precipitation event and bank overflow. The maximum projected rise is 3.25 feet per hour. The 100-year flood is projected to crest within 10 hours of the rain event and remain unchannelized for 20 hours. The maximum flood level is expected to have a 16-hour crest period and a 48-hour floodplain duration (NPS 1986).

The national lakeshore wetlands incl ponds, marshes, lowland forests, an peatlands. Variations in water levels seasonally and annually may result wetlands changing from one form to another. Identification and classificat wetlands in the river corridor and surrounding national lakeshore area based on the U.S. Fish and Wildlife Service National Wetlands Inventory maps, are shown on the Floodplain Wetlands map. Major wetland syste delineated for the national lakeshor palustrine, riverine, and lacustrine. are no designated wetlands (as authorized by section 404(c) of the Water Act [33 USC 1251 et seq.]) the Little Calumet River corridor stu area. There are also no advanced identified wetlands (as per 40 *Code Federal Regulations* 230.80 – pers comm., Tom Glatzel, Environmenta Protection Agency, Regional Office Wetlands Protection Section, Chica 5/24/90). Advanced identified wetla are wetlands that the Environmenta Protection Agency (EPA) has dete that they will advise against issuan section 404 permit by the Corps o Engineers.

Air Quality

Air quality in the vicinity of the Ind Dunes National Lakeshore is affec major extent by the urban influenc the Chicago metropolitan area, an somewhat more directly by the ad urban and industrial development around the cities of East Chicago, Hammond, and Gary. Many differ industries have located in this are a major emphasis on steel mills a electric power generation plants. steel mills and the power plants u quantities of coal for fuel, causing emission of significant quantities dioxide and particulates. In additio fuel use, steel mills can also be a

of particulates, organic emissions from coke ovens, and other pollutants.

National ambient air quality standards (NAAQS) were established under the Clean Air Act, as amended in 1977. The national lakeshore has been designated a class II area, which means that moderate increases in ambient pollution levels will be tolerated, but the pollution levels must remain within the NAAQS. NAAQS consist of two types – primary, for protection of human health, and secondary, for protection of human welfare.

The National Park Service has established a national air quality research and monitoring program that includes a data collection station at park headquarters. Other air quality monitoring stations in the lakeshore area are in Ogden Dunes (operated by IDEM) and on Bethlehem Steel Corporation property.

An additional NPS program, the air quality biological effects research program, found that biological resources have been affected by air pollutants at Indiana Dunes. Research indicates that there has been a decrease in lichens known to be sensitive to sulfur dioxide (NPS 1988a). The most common air pollution effect on biological resources is foliar (leaf) injury due to ozone. Foliar injury to vascular plants from ozone has been documented as occurring on several species, including eastern white pine, jack pine, red oak, sycamore, yellow popular, white ash, black cherry, quaking aspen, box elder, willow, basswood, elderberry, sunflower, milkweed, Joe-pie weed, evening primrose, frost grape, and poison ivy. Visible pollution injury to the white and jack pines appeared widely throughout the national lakeshore (Armentano et al. 1984).

A criteria pollutant monitoring program has been established at Indiana Dunes by the National Park Service. The program evaluates pollutant sources of ozone and sulphur dioxide. Primary sources of ozone pollution are organic materials and oxides of nitrogen from motor vehicles, while sulphur dioxide sources are primarily of industrial origin. During 1984-86, ozone levels exceeded the primary NAAQS on four days during 1984 and on no days during 1985 or 1986 at the national lakeshore. Currently, data are insufficient to show a significant trend over time of ozone levels either increasing or decreasing in the lakeshore area. Sulphur dioxide levels monitored during 1980-87 indicated levels about 20 to 40 percent below the primary NAAQS at Indiana Dunes National Lakeshore (NPS 1988a).

The airborne deposition of toxic trace elements has been measured at Cowles Bog. While very high, the soil concentrations of these elements do not exceed EPA standards. These depositional rates may be extrapolated to be similar to most of the national lakeshore (Cole et al. 1989).

Based on EPA air quality evaluations, designations of attainment or nonattainment for air quality classification have been made. An attaintment designation means that measurements are within the limits specified by the NAAQS and that no adverse health effects are expected to occur. A nonattainment designation indicates that measurements of a particular pollutant sometimes exceed the national standards and that causes a risk of adverse health effects. For particulates, the EPA has designated portions of Lake and Porter counties, including most of the lakeshore areas between the shoreline and I-94, as nonattainment. For sulphur dioxide, the EPA established a nonattainment designation for a portion of Lake County along the lake and the national lakeshore area. Porter County was listed as "cannot

be classified." For ozone, the most difficult and widespread air pollution problem in the region, Lake and Porter counties have has been designated as nonattainment. LaPorte County has been designated as nonclassified. No air quality designation for carbon monoxide has been made by the EPA for the Lake, Porter, and LaPorte county area. The EPA has approved the Indiana state implementation plan for carbon monoxide, and the standard should be attained in a few years.

Air quality can be expected to improve in the lakeshore area within the next few years. Carbon monoxide, particulates, and sulfur dioxide levels should be reduced as current and future state implementation plans are carried out. Attainment of the ozone standard will require many years of effort since the lakeshore is tied with the entire Chicago metropolitan area, which is among the three or four worst ozone problem areas in the nation (Traffic Engineers 1989).

Prime and Unique Farmlands

No soils in the Little Calumet River and surrounding areas of the national lakeshore within Lake and Porter counties qualify as prime or unique farmland.

LAND USE AND GEOGRAPHIC INFORMATION AND ANALYSIS

A geographic information system (GIS) is a variety of computerized techniques that copy, transfer, manipulate, combine, and analyze various types of mapped information. GISs have been used to compile and analyze information in the preparation of this document. Through the assistance of the GIS unit of the National Park Service, a satellite "SPOT" digital image of northwestern Indiana was used along with various other mapped information to provide accurate, up-to-date information about the Little Calumet River corridor and northwestern Indiana. The original SPOT image was taken in August 1988. Other mapped information includes transportation (roads, railroads, and utility corridors), hydrography (water bodies, ponds, lakes, and streams), and political boundaries.

In addition, the National Park Service incorporated digital wetlands information from the U.S. Fish and Wildlife Service and floodplain delineations from the National Flood Insurance Program with the other basic mapped information. NPS staff also added regional recreation areas and existing zoning from existing sources. With this information the Land Use/Land Cover and Floodplains and Wetlands maps were compiled. The Land Use/Land Cover map illustrates the overall land use and vegetation patterns in the Little Calumet River and Salt Creek corridors throughout the national lakeshore and the surrounding region.

CULTURAL RESOURCES

Archeological Resources

Archeological artifacts recovered from the Porter County area are typical of culture from the Paleo-Indian period, 12,000 to 9,000 years before the present. Although Paleo-Indian materials may be known from Porter County, none have been documented to date from the national lakeshore. Such remains would be extremely rare in the area. Prehistoric sites have been found within the national lakeshore boundaries, sites that date to the Middle Woodland period, 200 B.C. to A.D. 500. Further, the prehistoric sites from the lakeshore are not limited to the Middle Woodland period. Late Woodland materials are also commonly found with the national lakeshore.

To date, only limited archeological studies have been conducted at Indiana Dunes National Lakeshore. Included were a field appraisal by Honerkamp (1968), a small excavation at Bailly Homestead by Limp (1974), a study at Bailly by Munson (1976), and an assessment at West Beach by Johnson (1974). The East Unit transit center site was surveyed in 1984 by the Department of Anthropology, Northwestern University. All of the national lakeshore, except Miller Woods and the lands added as part of Public Law 96-612 (1981), has had reconnaissance-level survey coverage during which 13 archeological sites were recorded. The most recent archeological survey in the national lakeshore was conducted in 1989 for the East Unit campground site; this survey revealed an additional 15 archeological sites. The finding of at least 28 sites demonstrates that significant archeological materials are present within the national lakeshore and are currently obscured by sand and/or dense vegetation or exist in other places.

Historical Resources

Historical records from the 1600s to the 1800s place the Potawatomi and Miami Indians as early inhabitants of the region. Evidence of a large ¼- by ⅝-mile camp or village site near the Bailly Homestead has been identified by a surface survey (Honerkamp 1968); the site is near trail corridors that adjoin the east branch of the Little Calumet River.

The prehistoric record of the native American occupancy of the southern shores of Lake Michigan is not well known. An account written in 1679 reported a village of Miami, Mascouten, and Wea Indians near the portage of the St. Joseph and Kankakee rivers, less than 50 miles from the national lakeshore. The Jesuit priest Claude Jean Allouez reported Potawatomi groups on the western shores of Lake Michigan in 1667. Evidently the Potawatomi began to migrate southward during the last part of the 17th century. By the late 18th century, they inhabited the entire region surrounding the southern end of Lake Michigan. One of the first permanent white settlers in the area was Joseph Bailly. He had a license to trade with the Potawatomi and in 1822 set up a trading post on the Little Calumet River.

Immediately adjacent to the Little Calumet River corridor is the Joseph Bailly Homestead complex. This national historic landmark is also listed on the National Register of Historic Places. The homestead/trading post was the first of its kind in northwestern Indiana. Five structures associated with the Bailly family are included in the site. The homestead, settled in 1822 by Joseph Bailly (a French Canadian fur trapper), remained with his heirs until 1919 when the deed was transferred to the School Sisters of Notre Dame, who used the property as a retreat. The property was purchased by the National Park Service in 1971. The exteriors of the buildings have been restored and maintained for interpretive and environmental education purposes, while the interiors are being adaptively used for interpretive purposes. The primary interpretive theme of the Bailly Homestead complex is the fur-trading period.

Adjacent to the Bailly Homestead is the Chellberg Farm that was homesteaded in 1874 by Swedish immigrants. This 80-acre restored farm includes seven historic structures (main house, barn, chicken house, pump house, corn crib, granary, and maple sugar house) listed on the NPS List of Classified Structures. The Chellberg Farm has been evaluated and determined not to be eligible for the National Register of Historic Places. Nonetheless, interpretive programs conducted at the farm include living

history demonstrations of 19th century farm life, with farm animals and farm machinery.

Adjacent to the Bailly Homestead is a 63-acre property known as Goodfellow Camp. The camp was established by philanthropically minded executives of USX Gary Works, Carnegie Illinois Steel Corporation, to provide summer recreational vacations for children who lived in the city. The camp was closed during the mid 1960s; the National Park Service acquired the property during the 1970s.

The nature and course of the Little Calumet River were considerably changed when the Burns Ditch was excavated in 1926. Before that time the various branches of the Little Calumet drained westward into the Grand Calumet River and Lake Michigan. The construction of the Burns Ditch and the Portage/Burns Waterway created man-made riverbanks and channels and permitted the reclamation of more than 20,000 acres of wetlands in Porter County and in Gary.

The early aboriginal trails, such as the Calumet Beach Trail and the Tolleston Beach Trail, roughly paralleled the original Little Calumet (an old sluggish stream), but would be further removed from the present banks. Because of these historic changes to the Little Calumet, it is unlikely that traces of these trails will be discovered immediately adjacent to the present streambanks, except where they crossed the stream west of the Bailly Homestead and at the juncture of Salt Creek and the Little Calumet.

EXISTING DEVELOPMENT

Boating and Marinas

Marina development has created a demand for riverbank space. No marinas are proposed by the Park Service, but at least four have been proposed by others for sites along the Portage/Burns Waterway. Existing marina developments use nearly all the bank frontage on both sides of the Portage/Burns Waterway plus some distance up the east branch of the Little Calumet River and the Burns Ditch.

Existing Trails

Currently there is no single trail network traversing the entire national lakeshore. The only existing trails within the river corridor study area are those found at Inland Marsh on the west end and at the Bailly Unit on the east end.

The Inland Marsh trail network is 5.3 miles long and includes hiking and cross-country skiing trails. These trails extend no farther east than Old Stagecoach Road. A trail heading south from Inland Marsh to the Little Calumet River and then east along the river and north beside the waterway to US 12 was proposed in the 1984 *Trail Plan*. This trail proposal has not been implemented, but the portion that connects Inland Marsh to the river and then to its confluence with the Portage/Burns Waterway has been retained as part of the proposal in this study.

The Bailly Unit trail system is composed of 4.9 miles of existing hiking trails. Another 2.6 miles of trails are proposed in that unit, including 1.4 miles of bike trail. The existing trails extend in loops from Bailly Cemetery to Bailly Homestead and Chellberg Farm along the Little Calumet River and back to the Goodfellow Camp. The NPS 1984 *Trail Plan* proposed to extend the existing trail ½ mile farther west along the east branch of the Little Calumet River.

REGIONAL RECREATIONAL AREAS/FACILITIES

The following is a partial list of recreation areas that can be found in the northwestern Indiana area. Each description indicates whether it is a state, county, city, or private area. (The areas are shown on the General Development map, which is in "The Plan" section of this document).

Indiana Dunes State Park (state). Indiana Dunes State Park lies between Lake Michigan and US 12 and is bounded by Kemil Road on the east and Dune Acres on the west. The eastern two-thirds of the park is a natural area allowing no development, fires, or organized activities. This area of the park contains Mt. Tom, the highest remaining Indiana dune (192 feet tall) and three of the largest blowouts in the park. The 2,182-acre park provides a self-guiding nature trail and a nature center staffed by two park naturalists. There are 309 campsites, 16 miles of marked hiking trails, cross-country ski trails, and equipment rental. Six picnic shelters are available for rent, and a lifeguard is on duty at designated swimming areas.

Calumet Prairie (state). The Calumet Prairie, a 140-acre state nature preserve, is generally bounded on the north by a pipeline right-of-way just south of I-90 and on the east by a north-south boundary line that is approximately 300 feet west of IN 51. The Burns Ditch is about ¼ mile from the southern property boundary. The area contains a high quality example of a wet sand prairie, a type not currently included in the national lakeshore.

Marquette Park and Lake Street Beach (city of Gary). The Marquette Park Beach area contains one concession stand. The bathhouse is currently closed and undergoing structural evaluation. Paved parking is available for approximately 660 cars; and paved beach parking provides approximately 380 more spaces. The 240-acre park also contains a pavilion with parking for approximately 95 cars. The pavilion was rehabilitated in 1980 and is used for social functions. Lake Street Beach has a boat ramp and parking space for approximately 480 cars. There is a concession stand with additional parking for about 240 cars.

Deep River County Park (Lake County). Deep River meanders through the 906-acre park, which contains a restored gristmill. A sawmill, picnic shelter, and playground are being constructed. The park contains the only canoe livery on the Deep River, and canoeing is offered seasonally.

Portage Imagination Glen (city of Portage). This 223-acre area contains some active recreation areas including picnic areas and ballfields. It also contains trails that traverse the river bottom meadows of the glen, and the glen is an excellent area for nature study, bird-watching, and jogging.

Hawthorne Park (town of Porter). Picnicking, trails, ballfields, fishing, and canoeing are available in this 35-acre park.

Washington Park (city of Michigan City). This 99-acre park is owned and maintained by Michigan City and includes parking for approximately 600 cars, 3,000 feet of beach on Lake Michigan, marina access, and a zoo.

Four Winds Park (town of Lake Station). Recreational facilities at this site include a soccer field, tennis and

basketball courts, and ball diamonds. Picnic shelters and playground facilities are also available.

Riverview Park (town of Lake Station). This park contains the Riverview pool complex, four picnic shelters, a picnic cabin, and a gazebo. Sports facilities available include baseball and softball fields and basketball and tennis courts. There is

also a fitness trail and fishing acce to Deep River.

Woodland Park (town of Portage This 64-acre park houses a comm center with banquet hall and meet rooms. It also has picnic shelters, baseball and softball fields, and seasonal recreation facilities.

THE PLAN

This plan provides a method to connect the diverse existing national lakeshore trails into one comprehensive trail system. Four new trail components will be established to accomplish this comprehensive trail network:

- the east-west connection route
- the east branch Little Calumet River hike/bike path
- the US 12 hike/bike path
- the east end bike route

This trail system will provide for pedestrian and bicycle transit and will also provide a potential means of traversing the corridor by canoe. The trails will link the river, natural and cultural resources, and recreational facilities into one continuous network. Visitor activities on the trail system will include hiking, biking, fishing, canoeing, and cross-country skiing. These activities and facilities will be tied closely to the natural, cultural, and recreational resource opportunities already provided in the area and will be compatible with existing land uses. A discussion of the potential regional trail connections is included at the end of the description of the plan.

The plan also provides better river access, parking, and recreational opportunities and addresses resource protection issues upstream along the Little Calumet River and Salt Creek. Five new river access sites will be established:

- the Howe Road river access
- the Bailly Homestead canoe landing
- the IN 149 river access
- the Boo Road river access
- the Burns Ditch river access

The trail system components and the river access sites are shown on the General Development and General Development – Detail maps

Most of the proposed actions are totally within current national lakeshore boundaries and on federal land. The proposals in this plan may be implemented shortly after plan approval as funding and other national lakeshore development priorities allow. Other plan recommendations will require boundary adjustments, land acquisition, cooperative agreements, easements, or actions by others. These proposals will be developed as cooperative agreements or boundary adjustments are made and lands or interests in lands (easements) are acquired. Priorities for establishing the trails and river access sites will vary as funds and land acquisitions become available and as visitor use patterns develop.

GENERAL DEVELOPMENT

The following trails will be constructed in the least intrusive manner possible so that they will fit compatibly and unobtrusively into their particular surroundings. Surfaces for the trails will be appropriate for their prescribed use (hiking, biking, or hiking and biking combined). Hiking trails will use softer, more permeable, or more resilient surfacing materials such as crushed aggregate, a soil-aggregate mix, stabilized turf, or soil cement. Biking trails will have impervious, durable surfaces such as asphalt, concrete, or soil cement.

East-West Connection Route

The east-west connection route connects the proposed West Unit hike/bike trail at Hillcrest Road in Ogden Dunes with the proposed east branch Little Calumet River hike/bike path (described below) trailhead at the Old Crisman Road bridge.

The route will begin at a trailhead at the Inland Marsh parking lot near the Hillcrest Road and US 12 intersection in Ogden Dunes. From the trailhead, this route will head east along the south side of US 12 and across the Portage/Burns Waterway on a pedestrian/bicycle bridge as part of or attached to the south span of existing US 12. The route will continue eastward past the Little Calumet River Basin Development Commission's proposed marina site to Crisman Road, then south to the Old Crisman Road bridge. The length of this segment will be about 1.3 miles.

East Branch Little Calumet River Hike/Bike Path

The east branch Little Calumet River hike/bike path will extend east from the Old Crisman Road bridge to Goodfellow Camp following the banks of the east branch of the Little Calumet River.

From the north side of the Old Crisman Road bridge, this trail will pass under the north ends of the Old Crisman Road bridge and the double-span bridge of IN 249, and turn north along the IN 249 right-of-way to skirt the existing marina. Returning to the north bank of the river, the hike/bike path will continue east, paralleling the river, to the Samuelson Road bridge.

At Samuelson Road the hike/bike path will cross the bridge to the south side of the river and continue eastward across Salt Creek where a new 150-foot footbridge will be constructed. East of Salt Creek, the hike/bike path will connect to a short spur trail that will link the trail system to the Boo Road river access.

The hike/bike path will continue east to the IN 149 river access. This trail will avoid wetlands by staying on higher ground. In areas that may contain federal and/or state-listed species, elevated boardwalks will be constructed to minimize the loss of sensitive plant or animal habitat. The hike/bike path will cross the river on the IN 149 bridge, connect to the US 12 bike path (described below), and together they will pass beneath the IN 149 bridge and continue eastward on the north side of the river. There will be hike/bike path crossings under IN 149 on both the north and south sides of the river to provide access to the IN 149 river access and to connect with the US 12 bike path. There will be no at-grade crossings of IN 149.

The trail will continue along the north side of the river and pass beneath the Conrail Railroad bridge over the Little Calumet River. From there the trail will begin a gradual climb away from the river, following the northern NPS boundary, crossing the existing Bailly Unit hiking trail to Goodfellow Camp, where it will link to that facility's existing road and continue on it until intersecting Howe Road at the camp entrance.

At this point the hiking and biking uses will separate. Bikes will continue north on Howe Road to Oak Hill Road to the east end bike route (described below), and hikers will continue east on existing trail networks within the Bailly Unit. The trail distance from the Old Crisman Road bridge to Howe Road is about 4.5 miles.

US 12 Hike/Bike Path

A bicycle path will be developed along the south side of the US 12 right-of-way, extending from the IN 249 intersection with US 12 eastward to IN 149 and Oak Hill Road. Most of the intersection crossings along this bicycle path will be at grade, including those at Bethlehem Steel main gate access road and all of the lower traffic volume service roads and driveways. The US 12 hike/bike path will leave the US 12 right-of-way just west of IN 149 and turn south into the national lakeshore, connecting with the east branch Little Calumet River hike/bike path. The two paths will continue together under IN 149 and on to Goodfellow Camp.

The US 12 hike/bike path will require an easement along the south side of the US 12 right-of-way (see "Boundary Adjustment/Cooperative Agreements" section), adequate to provide space for two directions of bicycle traffic and safe separation distance from the highway. A minimum width of 30 feet will be needed for the path right-of-way; however, a 70-foot easement would provide a proper 30-foot separation from both the highway and adjacent private property to allow for a visual and noise buffer as well as flexibility in path alignment.

East End Bike Route

The east end bike route will provide a 13-mile designated bicycle route that will connect the East Unit of the national lakeshore with the Bailly Unit, using existing streets and rights-of-way. The route will be designated by roadside signs and on bicycle maps.

From Goodfellow Camp the route will go north on Howe Road, east on Oak Hill Road, and then north on Wagner Road to US 12. A ¼-mile spur bike route on Howe Road will connect the east end bike route with the Little Calumet River hike/bike path terminus at the Goodfellow Camp entrance at Howe Road. The east end bike route will continue east on US 12 (½ mile) to Waverly Road, then north to South State Park Road, east to Tremont Road, and south to US 12. The bike route will follow US 12 again (½ mile) east to Furnessville Road where it will continue east to Kemil Road and then north across US 12. From Kemil Road the bike route will proceed east on Beverly Drive for approximately ¼ mile, then turn south on an abandoned road to Service Avenue, and continue east on Service Avenue to Broadway Avenue. From Broadway, the bike route will head north to Beverly Drive and then east along Beverly Drive to US 12 and the Porter/LaPorte county line.

RIVER ACCESS AND PARKING

To provide facilities for fishing, hiking, and canoeing, and to preserve the resources along the streams, the Park Service will construct access points along the river (see General Development map). These access points will have parking, toilet, and trash facilities, as well as connections to trail systems and recreation sites along the Little Calumet River. The access points will be where conditions already favor their construction. Site criteria include safe road access, close proximity to utility service, ease of maintenance access, compatible surrounding land uses, and adequate available land area. Five such sites, spaced from ½ mile to 2 miles apart, have been identified along the Little Calumet River.

Of the five river access areas identified, the Howe Road and IN 149 river access areas will be the highest priorities. These areas are currently used for river access, and this is one of the more scenic segments. In addition, this segment has no rapids so it is well suited for novice

canoeists. The Howe Road access area is on land currently owned by the Park Service, and the IN 149 access area is owned by the Indiana Department of Transportation. The IN 149 access area will provide access to the east branch Little Calumet River hike/bike path. Of the remaining river access areas, the Boo Road access area will be developed next because it will provide access to both the river and to the east branch Little Calumet River hike/bike path. The Burns Ditch access will provide both river access and a connection to the proposed Little Calumet River Basin Development Commission's hike/bike path.

Howe Road River Access

This access will provide hiking, trail, and fishing access, a canoe launch area, parking for 10 to 20 cars, toilets, and trash facilities. A canoe livery could be operated by a concessioner in this area. The river access site will extend from Howe Road, at a point about 100 feet from US 20, northeast to the Little Calumet River floodplain where a stabilized canoe launch area will be constructed. Vehicle parking will be provided above the floodplain to serve canoe launching and trailhead uses. Trails will connect the parking lot to the canoe launch site and also extend through the wooded floodplain to the Little Calumet River bridge at Howe Road. Here the trail will connect to the Bailly Unit trail system.

Bailly Homestead Canoe Landing

A canoe dock will be constructed at the Bailly Homestead to provide river access. The dock will not link to trails but will re-create the sense of arrival that early travelers had when reaching the Bailly Homestead.

IN 149 River Access

This bridge over the Little Calumet Rive was designed to span the river's floodplain and allow unimpeded flood flow; the design will also provide an opportunity to construct parking directly beneath the span of the bridge. Access the site will be from IN 149 by way of t frontage road paralleling it on the east side. Facilities will include parking for 1 to 20 cars, toilets, trash facilities, and a canoe put-in and take-out point. The facilities will be designed and located to minimize interference with flood flows. The east branch Little Calumet hike/bike path will be along the south bank of the river west of the IN 149 bridge and the north bank of the river east of it. It will pass under the IN 149 bridge and connect to the IN 149 river access site on the south side of the bridge.

Boo Road River Access

A trail and fishing access area will be developed near Boo Road within the lakeshore boundary. Parking will be provided for 10 to 20 cars, along with toilets, trash facilities, and a 200-foot tra to the east branch Little Calumet River hike/bike path.

Burns Ditch River Access

This river and trail access point will be developed on the west bank of the Burn Ditch at US 20 and County Line Road. Development will include parking for 10 20 cars, a canoe launch and take-out point, toilets, and trash and trailhead facilities. The site will be accessed from County Line Road north of US 20. This site will also provide access for the Burn Ditch hike/bike path that has been proposed by the Little Calumet River Basin Development Commission.

VISITOR USE

Visitor Impact Management/Carrying Capacity

Carrying capacity, as applied to recreation lands, is intended to help estimate the level of visitor use that an area can support. The goal is to identify a level of use that will ensure that resources will not suffer degradation due to overuse and that will preserve the quality of visitor experiences. Current visitor use levels are not damaging lakeshore resources. The National Park Service will take appropriate measures to ensure that national lakeshore resources remain in an unimpaired condition.

It is currently not practical to attempt to determine the carrying capacity of the Little Calumet River corridor trail system. Too little information is available on the resources, present use, and potential future use of the area to allow for an accurate estimation of the corridor's capacity. A visitor management program will be established, which will help avoid undesirable changes in the resource base and ensure the highest possible quality in visitor experiences.

This will permit park managers to identify potentially undesirable changes in use patterns before resources or visitor experiences are negatively impacted. If potentially undesirable changes occur, management strategies will be implemented to keep impacts within acceptable levels. The program will also evaluate the effectiveness of management actions within the corridor. The program will not attempt to set numeric capacities to limit visitor use; it will define specific desired conditions to be maintained and allow for phased implementation of corrective management actions only after impact standards had been exceeded and problems had been verified. To implement the program, NPS staff will establish a systematic monitoring network within the unit to establish baseline resource conditions. Once baseline conditions are established, the network will measure the effects of visitor use on the ecosystem, social conditions, recreational activity patterns, and national lakeshore facilities.

In addition to resource monitoring, national lakeshore staff can also conduct a visitor survey to determine use patterns (including turnover rates, average length of stay, and intralakeshore travel patterns) and to provide additional baseline data to support management actions. Because the current level of use in the corridor is assumed to be quite low, the survey may have to be extended over a number of use seasons to achieve a sample large enough to allow for accurate statistical analysis.

When baseline data is established, the national lakeshore staff will determine the desired conditions that should be maintained within the river corridor. These desired conditions, which will be expressed in terms of "impact indicators," will be the standards against which impacts are assessed. Examples of potential impact indicators include the prevalence of streambank erosion, the average number of groups encountered by canoeists, or the amount of litter found along the river.

If subsequent monitoring indicated that any impact indicator standard is being exceeded, management will then initiate steps to determine if conditions have become unacceptable. The initial management response to a possible violation of standard will be a reassessment of the standard to determine if it is reasonable and appropriate. If the standard is affirmed, management will then investigate the conditions associated with the indicator to verify that an unacceptable situation actually exists. If an unacceptable

situation is found, management will analyze the cause of the violation. Following such an analysis, managers will determine the most appropriate action to take to correct the situation.

The potential management alternatives that could alleviate an undesirable condition will vary widely from situation to situation. Further, a broad range of alternatives can be implemented to mitigate any one situation. If monitoring and subsequent analysis determines that a management action is needed to correct an undesirable condition, managers will select the corrective technique that is least intrusive to the visitor experience. If that technique is ineffective, management will then progress to the next-least intrusive technique. This progression will continue until the undesirable condition has been corrected.

Information, Orientation, and Interpretation

The main visitor experiences to be offered will be hiking, bicycling, canoeing, and fishing. To facilitate these experiences, information and a map of trail and canoe routes, access points, and their relationship to the entire national lakeshore will be provided at all trail and canoe access points. Information on safety, fishing, and low impact use of the resources will be presented in an interesting and creative manner. Rather than a listing of rules and regulations, information will be presented to give visitors a sense of the kind of environment they are in, how they can safely enjoy that environment, and how they can use the environment and leave it as good as or better than they found it.

The canoe dock at the Bailly Homestead will allow river users to visit the Bailly Homestead the way that Joseph Bailly may have in the 19th century. Interpretive programs will be developed to show the connection between the Bailly Homestead and the Little Calumet River.

Informative/interpretive messages will be designed to accommodate people with disabilities.

Accessibility

All biking and hiking trails and paths will be designed for access by special needs populations such as the elderly and handicapped. The bicycle paths will be surfaced to facilitate wheelchair access. Hiking trails through the dunes may not be accessible to wheelchairs, but these trails will be accessible to visitors with visual impairments. All development at the national lakeshore will comply with all appropriate laws and regulations, including the Architectural Barriers Act of 1968 (42 USC 4151 et seq.) and the Rehabilitation Act of 1973 (29 USC 792 et seq.).

CONNECTIONS TO OTHER RECREATIONAL FACILITIES

The General Development map identifies local and regional recreational facilities in northwestern Indiana that are publicly owned. These facilities include local, county, and state parks as well as potential trail linkages such as stream corridors and abandoned railroad rights-of-way. These facilities have been identified to show how the proposed trails and river access sites in this plan relate to other regional recreation area proposed trails and facilities and so that future trail links can be made through cooperative planning by local, county, regional, state, and federal agencies and governments.

The Little Calumet River Basin Development Commission has proposed a

trail along the Burns Ditch. This trail route would connect the national lakeshore east-west connection route, the Burns Ditch river access, the Calumet Prairie, and the proposed Little Calumet regional recreation area.

The abandoned Norfolk and Southern Railroad right-of-way segment from the Burns Ditch east to Salt Creek is a second potential trail link. This trail would connect the Burns Ditch, Woodland and Imagination Glen parks in Portage, and Salt Creek.

A trail link along Salt Creek from the Little Calumet River south would connect the national lakeshore trail system with Imagination Glen Park, the Norfolk and Southern right-of-way, and the abandoned Elgin, Joliet, and Eastern (EJ&E) Railroad right-of-way. The abandoned EJ&E right-of-way provides a potential link from Salt Creek westward toward Deep River and parks in Lake County.

A fifth potential trail corridor would be along the east branch of the Little Calumet River from US 20 upstream to Hawthorne Park. From Hawthorne Park this trail would continue south on existing streets approximately ½ mile (by way of Waverly, Lincoln, and Frances roads, across three major railroads, then south on 15th Street to Broadway) to the abandoned EJ&E right-of-way.

RIVER AND LAND USE MANAGEMENT

River Access

Improved river access will lead to increased river use for hiking, fishing, and canoeing. Increased use could lead to conflicts among the user groups as well as require additional NPS management of activities and protection of resources. River use will be managed according to the approved *Little Calumet River Management Plan and Environmental Assessment* (NPS 1986).

Land Use and Stream Corridor Protection

The Park Service has no jurisdiction regarding land use upstream of the national lakeshore boundary. However, stream corridor protection beyond and upstream of the current national lakeshore boundaries is essential for maintaining water quality and flow levels critical to the fish, animal, and vegetation communities of the national lakeshore. Upstream land uses also have an effect on national lakeshore resources and recreational opportunities. To protect downstream water quality and water flows, land development upstream should be managed with careful consideration and specific knowledge about how different development will impact the area's water and recreational resources. Future development may be compatible with the preservation of the stream corridors as long as it does not destroy water resource or recreational values. Appendix C provides a discussion of stream corridor protection methods.

BOUNDARY ADJUSTMENTS/COOPERATIVE AGREEMENTS

Boundary adjustments and land acquisition (fee simple and easements) are the preferred method for trail and hike/bike path development and management. Where boundary adjustments and land acquisition are not possible, cooperative agreements will be developed to determine detailed trail alignment, development, and maintenance. Congressional action will be required to make boundary adjustments and authorize land acquisition. The national lakeshore has existing authority

to enter into cooperative agreements. The boundary adjustment and cooperative agreement proposals of this plan, described below, are limited to the area near the Portage/Burns Waterway and Burns Ditch river access.

The required width of the east-west connection route right-of-way could vary, depending on management, facility development, reclamation needs, and landscaping space requirements. The overall goal will be to develop the route right-of-way compatibly with the needs of private developers, adjacent landowners, and the Park Service by providing a noise and visual buffer between the various local land uses. The trail right-of-way will allow for limited dune reconstruction, stabilization, and planting, as well as flexibility in trail layout.

The east-west connection route will require a 100-foot-wide right-of-way easement extending east from Inland Marsh along the south side of the US 12 right-of-way to the east side of Crisman Road. At Crisman Road the easement will turn south between IN 249 and Crisman Road and extend to the Old Crisman Road truss bridge. At this point, the trail easement will extend under the IN 249 bridge (on the north bank) and, skirting marina development, continue east to the national lakeshore boundary. The 100-foot-wide easement will be about 9,600 feet long, requiring 22 acres of land to complete a continuous national lakeshore boundary for improved visitor safety, better management of the national lakeshore, and resource preservation. No other boundary adjustments or additional authorizations are required to implement the east-west trail connection.

Most of the east branch Little Calumet River hike/bike path alignment is within the current national lakeshore boundary. Approximately 2,500 feet, from the Old Crisman Road bridge east to the existing national lakeshore boundary (along the north side of the east branch Little Calumet River), is not within the boundary and will require a boundary adjustment or cooperative agreement to enable NPS development and/or management of the route.

The US 12 hike/bike path will require a 70-foot-wide right-of-way on the south side of the US 12 right-of-way from IN 249 to Oak Hill Road (approximately 30 acres).

The east end bike route will be on existing road surfaces; no boundary adjustment or cooperative agreements will be necessary.

Of the five river access points proposed along the Little Calumet River corridor, the IN 149, Boo Road, and Howe Road river accesses and the Bailly Homestead canoe landing are already within the authorized boundaries of the national lakeshore. The Burns Ditch river access will require the acquisition of 1½ acres of land northeast of the intersection of US 20 and County Line Road, on the west bank of the river.

PLANT MATERIALS/REVEGETATION PROGRAM

To minimize impacts of road, trail, and parking area construction on soils, vegetation, and water resources, a plant materials program will be developed. The goal of the plant materials program will be to develop indigenous, low-maintenance plant materials that are adaptive to disturbed sites.

SUMMARY OF DEVELOPMENT ACTIONS AND COSTS

RIVER ACCESS SITES (cont.)		GROSS COST
East-West Connection Route		
trail (7,000' x 10'), compacted surface	7,800 sq yds	$ 153,000
footbridge (attached to US 12)	10' x 300' span	255,000
East Branch Little Calumet River Hike/Bike Path		
trails (26,850' x 10')	29,800 sq yds	586,000
footbridge (over Salt Creek)	10' x 150' span	128,000
boardwalk with handrails	6' x 3,300'	26,000
benches (2 per 0.5 mile)	20 each	20,000
US 12 Hike/Bike Path		
bike path (10,800' x 10') compacted surface	12,000 sq yds	236,000
	Subtotal of Trails	**$ 1,404,000**
RIVER ACCESS SITES		
Howe Road River Access		
road construction* (2,200' x 18'), asphalt	4,400 sq yds	$ 144,000
parking lot (10-20 cars)		
pavement, asphalt	750 sq yds	25,000
concrete curb and gutter	325 lin ft	10,000
footpath/trail (2,800' x 8', crushed stone, sand)	2,500 sq yds	26,000
portable toilet	1 each	1,000
trash receptacles	2 each	1,000
benches	2 each	3,000
Bailly Homestead Canoe Landing		
dock, floating 4' x 20'	80 sq ft	$ 8,000
stairs, 50' x 4'	200 sq ft	7,000
IN 149 River Access		
road construction* (300' x 18'), compacted surface	600 sq yds	$ 20,000
parking lot (10-20 cars)		
pavement, asphalt	750 sq yds	25,000
concrete curb and gutter	325 lin ft	11,000
portable toilet	1 each	1,000
trash receptacles	2 each	1,000
benches	2 each	3,000
Boo Road River Access		
road construction* (600' x 18'), asphalt	1,200 sq yds	$ 40,000
parking lot (10-20 cars)		
pavement, asphalt	750 sq yds	25,000
concrete curb and gutter	325 lin ft	11,000
portable toilet	1 each	1,000
trash receptacles	2 each	1,000
benches	2 each	3,000
bicycle rack (4-8 bikes)	1 each	1,000
hike/bike path to main trail and river (200' x 8')	180 sq yds	4,000

TRAILS		GROSS COST
Burns Ditch River Access		
road construction* (200' x 18'), asphalt	400 sq yds	$ 13,000
parking lot (10-20 cars)		
pavement, asphalt	750 sq yds	25,000
concrete curb and gutter	325 lin ft	11,000
portable toilet	1 each	1,000
trash receptacles	2 each	1,000
benches	2 each	3,000
Subtotal of River Access Sites		**$ 426,000**
PLANT MATERIALS/REVEGETATION PROGRAM	Lump Sum	$ 50,000
Total Construction Costs - Trails and Sites		**$1,880,000**
Advance Planning, Design, and Construction Drawing Preparation		**359,000**
TOTAL PROJECT COSTS		**$ 2,239,000**

* Two traffic lanes @ 8' wide each, two shoulders @ 1' each, asphalt pavement, ditch cross-section; public use roads, class III

Note: Total project costs presented are gross figures, which include advance planning, design, construction drawing preparation, construction supervision, and facilitating administrative services. Estimates are class C, meaning they are derived from average costs for similar facilities in other NPS areas.

COMPLIANCE

Consultation and coordination with the U.S. Fish and Wildlife Service (USFWS) and the Environmental Protection Agency have been undertaken concerning planning activities for the project that relate to Executive Order 11990 "Protection of Wetlands." Both agencies serve in advisory roles to the U.S. Army Corps of Engineers.

Informal consultation regarding development actions that may affect threatened or endangered species has been conducted with the U.S. Fish and Wildlife Service in accordance with section 7 of the Endangered Species Act (16 USC 1531-1434). The National Park Service made a formal request for an opinion regarding impacts on threatened and endangered species from the U.S. Fish and Wildlife Service, and their response to this request is in appendix D. The proposed actions have been modified to mitigate any adverse impacts on threatened and endangered species. The environmental assessment for this *Little Calumet River Corridor Plan* was issued September 17, 1990, and was on formal public review for 77 days. The finding of no significant impact (FONSI) is in appendix A of this plan.

The National Park Service has consulted and coordinated with the State Historic Preservation Office and the Advisory Council on Historic Preservation in the preparation of this document. Consultation and coordination has continued throughout the document review and revision process.

The Joseph Bailly Homestead complex, a national historic landmark that is also listed on the National Register of Historic Places, is within the Little Calumet River corridor. It must be preserved and protected in accordance with the laws and regulations cited below. This plan proposes no actions that will affect the homestead; however, if this plan leads to impacts adjacent to the homestead, all preservation regulations must be fulfilled.

The hiking trails proposed to transit the Goodfellow Camp will follow existing routes and create no adverse impacts on cultural resources.

All undertakings presented in this plan that would disturb previously unbroken ground will require prior survey by a professional archeologist and archeological monitoring during construction.

If any historic structures are acquired by the National Park Service as a result of this plan, the Midwest Regional Office will initiate the process of determination of eligibility to the National Register of Historic Places for such structures before any undertaking is begun. If found eligible, the structures will be protected in accordance with NPS-2 *Planning Process Guidelines*, NPS-28 *Cultural Resources Management Guideline*, the Historic Preservation Act of 1966 (as amended, 1981), and other pertinent directives. If found ineligible for the national register, said structures could be removed without further reference to the 106 compliance process.

CONSULTATION/COORDINATION

The following agencies have been consulted and provided assistance and information in the preparation of this document:

Advisory Council on Historic Preservation

Audubon Society

Bethlehem Steel Corporation

City of Gary

Chambers of Commerce

Counties of Porter and Lake

Department of Defense

U.S. Army Corps of Engineers

Indiana Department of Natural Resources

Division of Fish and Wildlife

Division of Nature Preserves

Division of Water

Izaak Walton League of America

Lake Michigan Marina Development Commission

Little Calumet River Basin Development Commission

National Steel Corporation, Midwest Division

Northern Indiana Public Service Company

Northwestern Indiana Steelheaders Association

Northwestern Indiana Regional Planning Commission

Save the Dunes Council

Sierra Club

State Historic Preservation Officer

Towns of Ogden Dunes, Porter, Portage, Chesterton, and Lake Station

U.S. Department of Agriculture

Soil Conservation Service

U.S. Department of the Interior

Fish and Wildlife Service

Geological Survey

U.S. Environmental Protection Agency

SCOPING ISSUES MEETINGS

The planning team has met with local organizations, interest groups, industry, government agencies and officials (local, county, city, state, and federal) to identify issues and inform affected parties about the Little Calumet River corridor plan process and status. The planning team has used the national lakeshore's Friends newsletter (*Singing Sands*), the superintendent's advisory group, special interest groups, industries, and local news media (radio and newspapers) to inform the public of the planning efforts and seek input on the issues to be addressed. Public scoping meetings for the *Little Calumet River Corridor Study* were held at the Douglas Center and the NPS visitor center in June 1989. In addition, meetings were held with local, state, and federal agency representatives to identify issues and discuss preliminary alternatives.

On July 24, 1989, the planning team met with representatives from the Northwestern Indiana Steelheaders Association to discuss their concerns about river access for fishing, possible new river trails, fishing regulations, and possible river use conflicts. A presentation and discussion was held with the superintendent's advisory group on July 28, 1989.

SUMMARY OF PUBLIC INVOLVEMENT

The National Park Service has conducted an extensive public involvement program to inform the public and local, state, and federal officials about the issues and alternatives addressed by the draft *Little Calumet River Corridor Plan*. The national lakeshore issued several press releases, and local newspapers conducted interviews and wrote many articles about the plan.

Throughout plan preparation, the planning team and national lakeshore staff met with individuals, elected officials, interest groups, and local, state, and federal agencies regarding the issues and alternatives.

The National Park Service distributed a summary of the draft plan in a special edition of the *Singing Sands* newsletter issued in September 1990, which included a prepaid response form. Three public meetings were held to describe the draft recommendations, respond to questions, and hear community concerns. More than 250 people attended the public meetings in Gary, Portage, and Chesterton on October 16, 17, and 18, 1990, respectively. The Park Service responded to many questions and received many comments at the public meetings.

Based on comments on the draft study, changes were made to the alternatives, including the elimination of trail connection routes B and C, elimination of a section of the US 12 hike/bike path (east of IN 149), and realignment of the trail along the Little Calumet River east of the Portage/Burns Waterway to avoid residential and industrial areas.

The public review period for the draft *Little Calumet River Corridor Plan*, initially 60 days, was extended to 77 days. The review and comment period closed on December 3, 1990. More than 600 written comments were received on the prepaid comment forms and from interest group form letters and personal, agency, and organization letters.

In March 1991 the National Park Service prepared and distributed a summary of public comments and NPS responses to all who attended the public meetings and wrote comments and to those who were on the general planning mailing list.

APPENDIXES

APPENDIX A: FINDING OF NO SIGNIFICANT IMPACT

The National Park Service has prepared the *Little Calumet River Corridor Plan* for the Indiana Dunes National Lakeshore. The plan, to which this finding of no significant impact (FONSI) is appended, describes the methods available to connect the East and West units of the national lakeshore, addressing all the major topics of general development (including hiking and biking trails), river access and parking, visitor use, connections to other recreational facilities, river and land use management, boundary adjustments and cooperative agreements, and a plant materials revegetation program.

The draft *Little Calumet River Corridor Plan/Environmental Assessment* was on public review for 77 days, beginning on September 17, 1990. Comments about the plan were accepted until the end of the review period. The environmental assessment analyzed the impacts of the plan and the no-action alternative management strategies for the river corridor, including the impacts on natural resources, cultural resources, visitor use, and the local economy. Any adverse impacts to wetlands or to threatened or endangered species have been mitigated in the plan and others will be mitigated in the design phase. With its connection of the East and West units, the plan will have positive impacts as a result of the increased provision of recreation uses of the river and the provision of canoe access points to minimize stream bank erosion. A complete evaluation of impacts resulting from the alternatives can be found in the draft plan and environmental assessment (NPS 1990).

Based on the environmental analysis and public and agency comment, I have determined that the plan will not significantly affect the quality of the human environment, and therefore an environmental impact statement will not be prepared.

Don H. Castleberry
Regional Director, Midwest Region

Date July 1, 1991

APPENDIX B: LITTLE CALUMET RIVER THREATENED AND ENDANGERED SPECIES

Scientific Name	Common Name	Status Fed	Status State	Hike/Bike Path	River Access Sites	Route A	Route B	Route C	River Hiking Trail
Plants									
Aralia hispida	Bristly sarsaparilla		SE	X					
Aralia racemosa	Spikenard		SR						
Arctostaphylos uva-ursi	Bearberry		SR				X		
Arenaria stricta	Stiff sandwort		ST	X					
Aristida intermedia	Slim-spike three-awn		ST	X		X		X	
Aristida tuberculosa	Seabeach needlegrass		ST	X					
Aristolochia serpentaria	Virginia snakeroot		SR						
Aster furcatus	Forking (forked) aster	C2	SE	X					
Aster junciformis	Rush aster		SR						
Aster ptarmicoides	Prairie goldenrod		ST						
Aster sericeus	Eastern silvery aster		SR						
Baptisia leucophaea	Cream wild-indigo		SR						
Betula papyrifera	Paper birch		SR	X					
Botrychium dissectum	Cut-leafed grape fern		SR						
Botrychium multifidum intermedium	Leathery grape fern		SE						
Cakile edentula var. lacustris	American searocket		ST						
Carex alata	Broadwing (winged) sedge		SR	X					
Carex atherodes	Awned sedge		SE	X					
Carex conoidea	Field sedge		SE	X					
Carex debilis var. rudgei	White-edge sedge		ST	X					
Carex flava	Sweet fern		SR	X					
Carex folliculata	Long sedge		SE	X					
Carex garberi	Elk sedge		ST						
Carex leptonervia	Finely-nerved sedge		SE	X					
Carex pedunculata	Longstalk sedge		ST	X					
Carex seorsa	Weak stellate sedge		ST	X					
Chrysosplenium americanum	American golden-saxifrage		SE	X					
Circaea alpina	Small enchanter's nigthshade		ST						
Cirsium pitcheri	Dune (sand) thistle	T	ST	X					
Clintonia borealis	Clinton lily		SE	X					
Coptis trifolia var. groenlandica	Goldthread		WL	X					
Cornus amomum	Silky dogwood		SE						
Cornus rugosa	Roundleaf dogwood		ST						
Cypripedium candidum	Small white lady's-slipper		SR	X					
Diervilla lonicera	Bush honeysuckle		SR						
Drosera intermedia	Spoon-leaned sundew		SR	X					
Drosera rotundifolia	Roundleaf sundew		WL						
Eleocharis melanocarpa	Black-fuited spike-rush		SE						
Eleocharis microcarpa	Small-fruited spike-rush		SE						
Eleocharis pauiflora	Few flower spike-rush		SR						
Eleocharis robbinsii	Robbins spikerush		ST						
Epigaea repens	Trailing arbutus		SR	X					
Eriophorum angustifolium	Narrow-leaved cotton-grass		ST						

Common Name	Scientific Name	Status Fed.	Status State	Hike Bike Path	River Access Sites	Route A	Route B	Route C	River Hiking Trail
	Euphorbia polygonifolia	Seaside spurge	ST	X					
	Fimbristylis caroliniana	Carolina fimbry	SE						
	Galium lanceolatum	Lance-leafed wild licorice	SR						
	Habenaria flava herbiola	Tubercled orchid	C2 SR						
	Habenaria hookeri	Hookers orchid	SE						
	Habenaria psycodes	Purple fringed orchid	SR						
	Habenaria viridis bracteata	Bracted orchid	SR						
	Hudsonia tomentosa	Sand-heather	ST				X		
	Hypericum adpressum	Creeping St. John's-wort	SE						
	Hypericum kalmianum	Kalm hypericum	SR						
	Juglans cinerea	Butternut	WL						
	Juncus pelocarpus	Brown-fruited rush	ST	X					
	Juncus scrooides	Scirpus-like rush	SE	X					
	Juniperus communis	Ground juniper	SR						
	Lathyrus ochroleucus	Pale vetchling peavine	ST	X					
	Lathyrus venosus	Smooth veiny pea	SR						
	Linum striatum	Ridged yellow flax	SR	X					
	Ludwigia sphaerocarpa	Globe-fruited false-loosestrife	SE						
	Ludwigia sphaerocarpa deamii	Round-fruited loosestrife	ST						
	Lycopodium appressum	Club moss	SE						
	Lycopodium clavatum	Running pine	SR	X					
	Lycopodium inundatum	Northern bog clubmoss	SE	X					
	Lycopodium obscurum	Ground pine	SE						
	Lycopodium tristachyum	Deep-root clubmoss	SE	X					
	Menyanthes trifoliata	Buckbean	WL	X					
	Milium effusum	Wood (tall) millet-grass	ST	X					
	Myosotis laxa	Small forget-me-not	SE	X					
	Nemopanthus mucronatus	Mountain holly	SR						
	Oryzopis racemosa	Black-fruit mountain-ricegrass	SE						
	Oryzopsis asperifolia	White-grained mountain-ricegrass	SE						
	Pana trifolius	Dwarf ginseng	SR	X					
	Panicum boreale	Northern panic grass	SR						
	Panicum verrucosum	Warty panic grass	SE						
	Pinus banksiana	Jack pine	SR	X	X	X		X	
	Pinus strobus	Eastern white pine	WL						
	Plantago cordata	Heart-leaved plantain	C2 SE						
	(Plantanthera)	(Pale green orchis)							
	Platanthera ciliaris	Yellow-fringe orchis	SE	X					
	Platanthera clavellata	Small green woodland orchis	SR	X					
	Platanthera flava var. herbiola	Northern rein-orchid	SR						
	Platanthera lacera	Green-fringe orchis	WL						
	Platanthera psycodes	Small purple-fringe orchis	SR						
	Poa alsodes	Grove blue (meadow) grass	ST						
	Pogonia ophioglossoides	Rose pogonia	SR						
	Polygala paucifolia	Gay-wing milkwort	SE	X					
	Polygonella articulata	Eastern jointweed	ST	X					
	Polygonum careyi	Carey smartweed	SE						
	Polygonum opelousanum var. adenocalynx	Smartweed	ST						
	Potamogeton pusillus	Small pondweed	SR						
	Prunus pensylvanica	Fire (pin) cherry	SR	X					
	Psilocarya scirpoides	Long-beaked baldrush	ST						
	Pyrola elliptica	Elliptical-leaf wintergreen	SR	X					

Common Name	Scientific Name	Status Fed.	Status State	Hike/Bike Path	River Access Sites	Route A	Route B	Route C	River Hiking Trail
Pyrola rotundifolia var. *americana*	American wintergreen		SR	X					
Rhynchospora macrostachya	Tall beaked-rush		SR						
Salix cordata	Heartleaf willow		ST						
Scirpus hallii	Hall's bulrush		SE						
Scirpus subterminalis	Water bullrush		ST	X					
Scirpus torreyi	Torrey bullrush		SE						
Scleria pauciflora	Fewflower nutrush		SE	X					
Scleria reticularis	Netted nutrush		SE						
Selaginella rupestris	Ledge spike-moss		ST				X		
Solidago spathulata var. *gillmanii*	Sticky goldenrod		ST	X					
Talinum rugospermum	Prairie fame-flower	C2	SE						
Thalictrum polygamum	Meadowrue		ST	X					
Trichostema dichotumum	Bluecurls		SR						
Utricularia intermedia	Flatleaf bladderwort		WL						
Utricularia purpurea	Purple bladderwort		SR						
Utricularia subulata	Bladderwort		SE						
Veronica glandifera	Speedwell		SR	X					
Viola blanda	Redstem wild violet		ST						
Amphibians Reptiles									
Ambystoma laterale	Blue-spotted salamander		SSC	X					
Ambystoma platineum	Silvery salamander		WL						
Ambystoma tremblayi	Tremblay's salamander		WL						
Clemmys guttata	Spotted turtle		ST	X					
Clonophis kirtlandii	Kirkland's snake	C2	ST						
Emydoidea blandingi	Blanding's turtle		SSC						
Hemidactylium scutatum	Four-toed salamander		ST	X					
Opheodrys vernalis	Smooth green snake		ST						
Ophisaurus attenuatus	Western slender grass lizard		SSC						
Pseudacris trisgriata	Striped (western) chorus frog		SSC	X					
Rana pipiens	Northern leopard frog		SSC	X					
Sistrurus catenatus	Eastern massasauga	C2	ST	X					
Thamnophis butleri	Butler's garter snake		ST						
Thamnophis proximus	Western ribbon snake		SSC	X					
Mammals									
Myotis sodalis	Indiana bat	E	SE						
Nycticeius humeralis	Evening bat		ST						
Spermophilus franklinii	Franklin's ground squirrel		SSC						
Taxidea taxus	Badger		ST						
Arthropods									
Lycaiedes melissa samuelis	Karner blue butterfly	C2	SE						

Common Name	Scientific Name	Status Fed.	Status State	Hike Bike Path	River Access Sites	Route A	Route B	Route C	River Hiking Trail
Birds									
Accipiter cooperi	Cooper's Hawk		SSC						
Ardea herodias	Great blue heron		WL						
Botaurus lentiginosus	American bittern		SE	X					
Buteo lineatus	Red-shouldered hawk		SSC						
Buteo platypterus	Broad-winged hawk		ST						
Caprimulgus carolinensis	Chuck-will's-widow		WL	X					
Certhia americana	Brown creeper		SSC						
Chlidonias niger	Black tern		SE						
Circus cyaneus	Northern harrier		ST	X					
Cistothorus palustris	Marsh wren		SSC						
Empidonax alnorum	Alder flycatcher		WL	X					
Ixobrychus exilis	Least bittern		SSC	X					
Lanius ludovicianus	Loggerhead shrike		SE	X					
Mniotila varia	Black and white warbler		SSC						
Nycticorax nycticorax	Black-crowned night heron		SE	X					
Rallus elegans	King rail		SE	X					
Sturnella neglecta	Western meadowlark		SSC						
Vermivora chrysoptera	Golden-winged warbler		SE						
Wilsonia canadensis	Canada warbler		SSC						
Wilsonia citrina	Hooded warbler		SSC	X					

Sources: IDNR, USFWS, NPS 1986, Resetar 1988, 1989

ST = state threatened
SE = state endangered
SR = state rare
WL = watch list
SSC = state special concern
T = threatened (federal)
C2 = proposed for listing (category 2 federal)

APPENDIX C: STREAM CORRIDOR PROTECTION MEASURES

The following discussion on stream corridor protection measures identifies some of the methods that are available for the protection of stream corridors. For a more complete discussion, see *Saving America's Countryside* by Samuel Stokes (1989) and *A Citizen's Guide to River Conservation* by Diamant, Eugster, and Duerksen (1984).

Cooperative Agreements. Cooperative agreements become necessary when jurisdictions meet or overlap. The development and use of the Little Calumet River corridor could require several cooperative agreements among the state, county, and local governments and their agencies, the Park Service, the Little Calumet River Basin Development Commission, and private industry. The cooperative efforts would address recreational facilities and uses such as parking lots, fishing, boating, trails for biking, hiking, and cross-country skiing, and trail maintenance.

Local Regulatory Programs. State and local governments have the authority to establish districts or zones for regulating the use of land so that incompatible land uses do not occur. Zoning may also be used to protect environmental or agricultural resources in a community. Sensitive resources, such as wetlands and floodplains, may be identified and protected through local zoning that restricts development and filling.

Flexible zoning techniques may be used to protect sensitive areas throughout a community without having specific zones. One type of flexible zoning method is an overlay zone that can be used for critical resources or hazard areas such as hillsides and steep slopes, wetlands, floodplains, and stream corridors. Overlay zoning creates an additional set of requirements to be met when special resources protected by the overlay zone would be affected by a proposed change. Overlay zoning does not affect the density or use regulations present under existing zoning.

Another local regulatory program that affects stream corridors is the County Drainage Board, which is responsible for the construction and maintenance of public drains. The board determines the need for and benefits of new drain proposals. The county surveyor supervises county ditch construction and maintenance. County drainage programs can have a significant effect on wetlands and stream character and flow.

Land Acquisition. Lands may be protected through donation, acquisition of conservation easements (a partial interest in the land), or fee-simple (outright) acquisition. Conservation easements may be used to provide public access or provide for a public (local, state, or federal) agency to manage or assist in the resource management of the private lands by preventing selected uses such as cutting trees, constructing houses, or paving portions of the area. Fee-simple acquisition is generally used where cultural and natural resources require full protection and management, where lands are needed to provide for public use, and where existing or potential land uses intrude upon or adversely affect significant natural or cultural resources. Lands may be acquired by federal, state, county, or local governments. In addition, private organizations such as private trusts may also acquire lands or interests in lands.

Local Private Trusts. A local private trust, established to protect some of the lands and resources, can be locally initiated and managed. Assistance with organization can be sought from some of the large national trusts (such as the Trust for Public Lands and the Nature Conservancy) that have programs to assist in the formation of local land trusts. The local trust's board of trustees would be local residents, and funds would be raised from donations of money or land from local landowners or corporations. The funds would be used to purchase lands with high resource values that might be developed in the near future.

State Regulatory Programs. The Indiana Department of Natural Resources (IDNR) has a wide range of responsibilities that include flood control and water resources management. All flood control projects, construction in the floodways of rivers and

streams, plans for reconstruction or construction of drainage ditches, and proposals for removal of minerals and withdrawal of water from navigable waters must be reviewed and approved by the IDNR. The IDNR is authorized to provide assistance for the management and regulation of lands that are subject to periodic flooding. The department maintains a natural, scenic, and recreational rivers system. The Water Division is responsible for the planning and regulation of state waters, and the Fish and Wildlife Division protects and manages fish and wildlife habitat improvement and protection programs as well as managing both nongame and sport or game fish and wildlife species.

The Water Pollution Control Board of the Indiana Department of Environmental Management is responsible for implementing state water quality programs to prevent the pollution of Indiana waters.

Federal Regulatory Programs. The section 404 program (section 404 of the Clean Water Act, formerly known as the Federal Water Pollution Control Act, 33 USC 1344) is the principal federal regulatory program governing activities in wetlands. The program is administered jointly by the U.S. Army Corps of Engineers and the U.S. Environmental Protection Agency. The U.S. Fish and Wildlife Service has an advisory and commenting role in the 404 process. Section 404 expressly prohibits the discharge of dredged or fill material into "waters of the United States" and their adjacent wetlands without a permit from the secretary of the army.

Federal or Regional Agency Technical Assistance Programs. A variety of federal, state, and regional technical assistance programs are available to assist in resource protection and planning for future development while protecting natural resources and potential recreation resources. These programs could assist in the identification and mapping of wetlands and floodplains, drafting model ordinances, and improving recreation services and facilities.

APPENDIX D: USFWS COMMENTS ON THE DRAFT PLAN

United States Department of the Interior

FISH AND WILDLIFE SERVICE
BLOOMINGTON FIELD OFFICE (ES)
718 North Walnut Street
Bloomington, Indiana 47404
(812) 334-4261 FAX 334-4273

IN REPLY REFER TO

November 26, 1990

Mr. Lawrence Beal
National Park Service
Denver Service Center-TCE
P.O. Box 25287
Denver, CO 80225-0287

Dear Mr. Beal:

The U.S. Fish and Wildlife Service (Service) has reviewed the Environmental Assessments (EA) for the Little Calumet River Corridor Plan and the West Unit General Management Plan Amendment, as well as the U.S. Scenic Road 12 Feasibility Study. This letter provides our evaluation, comments, and recommendations for all 3 documents.

These comments have been prepared under the authority of the Fish and Wildlife Coordination Act (16 U.S.C. 661 et. seq.) and are consistent with the intent of the National Environmental Policy Act of 1969, the Endangered Species Act of 1973, and the U. S. Fish and Wildlife Service's Mitigation Policy.

West Unit General Management Plan Amendment

This proposal involves 3 alternatives and several features. We will not comment on Alternative 3, which is the No-Action Alternative.

Alternative 1 includes construction of a new access road, transit center, and shuttle bus system for the west beach area. It also includes a system of hiking and biking trails and several boundary adjustments for protection of natural resources and visitor facilities.

According to the "Environmental Consequences" section of the EA (p. 51) the proposed new access road and transit center would involve grading/filling impacts to 16.3 acres of wetlands in the Tolleston Dunes area, as well as a new bridge over the west end of the Long Lake wetlands (Figure 1).

Alternate 2 would eliminate the proposed new road in favor of improving existing access roads, and would defer construction of the transit center/shuttle bus system. A new bridge would be constructed on County Line Road over U.S. 12 and 2 railroad tracks, to alleviate existing traffic hazards. Wetlands exist in all 4 quadrants of that intersection. Although mitigation features such as retaining walls would be used to minimize impacts, construction of the interchange and ramps would result in the direct loss of approximately 1.5 acres of wetland, chiefly due to ramp construction in the southwest quadrant. Fragmentation of the remaining wetlands in that quadrant would also occur (Figure 1). Mike Litwin of our Bloomington Field Office inspected the intersection site on October 17, 1990, with the assistance of

Larry Beal and Lynn Peterson of the National Park Service's (NPS) Denver Office and Tom Post of the Indiana Department of Natural Resources (IDNR). The north side of the southwest quadrant has been converted to non-wetland by previous fill and commercial development. The remainder of the wetland in the ramp corridor is chiefly palustrine, emergent with dominant vegetation of giant reed (Phragmites communis) (Photo 1). Wetlands in the other 3 quadrants contain greater diversity of wetland types and vegetation; according to the EA direct impacts to those wetlands will be minor or non-existent.

Proposed hiking and bike trail systems would be identical for both alternatives, with the exception that Alternative 2 would include an additional trail and parking area in Tolleston Dunes. A large wetland exists in the vicinity of that proposed parking area (Figure 1). Numerous wetlands exist along the trail corridors, including some that have been designated under the U.S. Environmental Protection Agency's (EPA) Advance Identification (ADID) program. The EA states (p. 51) that wetland impacts will be avoided or mitigated by the use of elevated boardwalks. The Service may request additional coordination at a later date to evaluate impacts to sensitive wetlands, such as interdunal pannes.

Proposed boundary adjustments would be identical for both alternatives. Adjustments consist chiefly of additions to NPS property, mostly for the purpose of protecting or enhancing existing ecosystems. Adjustment #7 may include construction of public access facilities for the Little Calumet River; this parcel contains palustrine, forested wetlands which should be preserved during construction (Figure 1). Generally, we would expect these boundary adjustments to be beneficial for fish and wildlife resources.

Endangered Species

The West Unit project is within the ranges of the following Federally-endangered or threatened species:

Indiana bat (Myotis sodalis)
peregrine falcon (Falco peregrinus)
dune thistle (Cirsium pitcheri)

Indiana bats hibernate in caves in southern Indiana during the winter, then disperse to the remainder of Indiana and other states during spring and summer for foraging and reproductive activity. Female bats establish maternity colonies under loose bark of living or dead trees. Provided that cutting of mature trees is avoided during the period May 1-August 31, the Indiana bat will not be affected by the proposed project.

Peregrine falcons have not nested in Indiana during recent times until 1989, when a successful nesting effort occurred at the Cline Avenue overpass near LTV Steel. That nest is still active, and it is now thought that another nesting may have occurred in superstructure at the U.S.X. Steel facility (Dr. Kenneth Brock, personal communication). These non-migratory falcons, as well as many migratory peregrines, forage along beaches in the National Lakeshore area. The beaches already receive human disturbance from the Lake Street access; generally the majority of migratory foraging (early-mid Autumn) does not coincide with times of greatest human beach use. We do not anticipate that the proposed trails and other improvements would result in impacts on falcon foraging or nesting (which is 60-100 feet above the ground), therefore, this species also will not be affected.

Dune thistles inhabit lakeshore dunes and blowout areas in the project area. The proposed trails to the beach at Miller Woods, at Tolleston Dunes, and near West Beach will traverse areas of suitable habitat, therefore, it is possible that human use could result in incidental take of specimens of the dune thistle. This possibility would be increased if human use is not restricted to the actual trail corridor. In view of this potential impact, and in accordance with Section 7 of the Endangered Species Act, the Service requests that a biological assessment be conducted by the National Park Service, to assist in evaluating the extent of impacts on this Federally-threatened species.

Attached to this letter is a list of Federal Agencies' Major Responsibilities under the Endangered Species Act; that document lists the general criteria for conducting a biological assessment. Specifically, the assessment should be targeted toward evaluating potential impacts on the dune thistle in the aforementioned areas. After the assessment is completed, additional informal and/or formal consultation may be necessary.

The project area is within the ranges of several candidate species for the federal endangered species list, as indicated in Appendix A of the Environmental Assessment. Although candidate status does not confer protection under the Endangered Species Act, eventual listing may occur as a result of further research. If listing of any of the relevant candidate species occurs, additional coordination may be required. The presence of candidate species would certainly figure into our evaluation of and recommendations for the project. We recommend that the aforementioned biological assessment for dune thistles include field surveys for the candidate plant species also.

Conclusions and Recommendations

In addition to the biological assessment, the Service makes the following recommendations for the West Unit Plan:

1. We strongly recommend selection of Alternative 2, due to the extensive impacts to wetlands and other habitats associated with Alternative 1. Both alternatives would require application to the U.S. Army Corps of Engineers, Detroit District, for a Section 404 permit.

2. If Alterative 2 is selected, mitigation will be necessary for wetland impacts associated with the intersection improvements at U.S. 12/County Line Road. Mitigation should consist of minimizing wetland loss and fragmentation, and compensating for unavoidable wetland losses at a ratio of at least 2 acres for each acre lost. We strongly support use of retaining walls to minimize wetland losses.

3. We recommend another property addition/boundary adjustment to include the area shown in Figure 3. This dune-and-swale area contains wetlands identified in the U.S. EPA's ADID program.

4. Due to the ecological sensitivity of the Miller Woods/Miller Beach area, additional consideration should be given to the proposed trail to the beach in that area. Measures should be considered which would minimize or eliminate human disturbance off established trails. We also recommend against the use of wide, raised gravel trails in ecologically sensitive areas.

Little Calumet River Corridor Plan

The main purpose of the Little Calumet River Corridor Plan is to connect the West Unit of the National Lakeshore with the rest of the National Lakeshore Units through a system of hiking and biking trails. The Plan includes construction of several new trails, river access facilities, and parking lots. Trails are proposed for the west end of the project corridor (3 connector routes), the river corridor, the U.S. 12 corridor, and the east end of the project corridor (13-mile bike route from Oak Hill Road to the LaPorte County line). River access facilities and parking lots are proposed for 5 locations from Burns Ditch to Howe Road.

As discussed in the Environmental Consequences section of the EA (p. 55), wetlands exist at several locations within the proposed trail corridors (Figure 2). The EA states that the 3 East-West connector routes would not impact wetlands, but that some of the trails and access sites are within wetlands. Special design and construction measures would be used to mitigate adverse impacts, but 0.2 acre of wetland may be permanently affected by boardwalk construction. Because design plans are not yet available, it is not yet possible for the Service to evaluate the extent of wetland impacts or to recommend additional mitigation measures. Please consult with us to help develop those plans.

Endangered Species

The list of federally-endangered or threatened species whose ranges include the project area currently contains the Indiana bat and dune thistle. Provided that the aforementioned tree-cutting restrictions for the Indiana bat are observed, neither of these species will be affected by the proposed project.

Several candidate species for the federal endangered species list occur within the project corridor. Please refer to the discussion of candidate species in our review of the West Unit proposal.

Conclusions and Recommendations

The Service requests that we be included in an interagency field inspection of the proposed trails and access sites prior to preparation of design plans, in order to assist in mitigating impacts to wetlands and other high-quality wildlife habitats.

U.S. 12 Scenic Road Feasibility Study

The purpose of the U.S. 12 Highway proposal is to enhance the scenic qualities of the highway for visitors entering the National Lakeshore. Four alternatives have been proposed in the study; we will not discuss the No-Action Alternative. The other 3 alternatives involve redesignating segments of U.S. 12 highway as Scenic Road, and rerouting highway traffic to other federal or state highways. Modifications proposed for scenic highway segments include reduced speed limits, exclusion of trucks, intersection modifications, road improvements, National Lakeshore boundary adjustments, and other aesthetic improvements. Alternatives 1 and 3 include scenic loops along Beverly Drive through Beverly Shores, and all 3 alternatives include new road segments on the west end of the project at Michigan City. Management options being considered include acquisition and management of road corridors only, or of wider "scenic corridors".

The "Design Modifications" section of the study (p. 59) states that road improvements would involve roadway widening and/or addition of shoulders in some

areas, to provide a standard 22-foot road width with 4-foot-wide turf shoulders throughout the project corridor. Road widening would sometimes involve intrusion into natural vegetation, including wetlands. Intersection improvements may also include disturbance to wetlands and other habitats. The majority of the wetlands in the potential impact area are in the West Beach Unit and in Beverly Shores (Figure 3). The "Environmental Consequences" section (p. 76) states that approximately 8.5 acres of wetland fill would occur along the Beverly Drive alignments. Wetland impacts would be mitigated by design and construction considerations, use of retaining walls, and compensation for unavoidable impacts. The document also states that a Corps 404 permit application would be submitted for proposed wetland impacts.

Endangered Species

The proposed U.S. 12 project is within the ranges of the federally-endangered/threatened Indiana bat, peregrine falcon, and dune thistle. Provided that the aforementioned tree-cutting restrictions are observed for the Indiana bat, none of these species will be affected by the proposed project.

Several candidate species for the federal endangered species list occur within the project corridor. Please refer to our discussion of candidate species in our review of the West Unit proposal.

Conclusions and Recommendations

1. The Service considers the extent of wetland impacts associated with the Beverly Drive alignments (Alternatives 1 and 3) to be unacceptable. We recommend either that these alternatives be discarded, or that scenic routes through Beverly Shores involve no road widening or other wetland disturbance.

2. We recommend avoidance of impacts to good-quality wetlands along the U.S. 12 corridor and minimization of impacts to other wetlands. Unavoidable wetland impacts should be compensated for at ratios commensurate with the type and quality of the wetlands being affected.

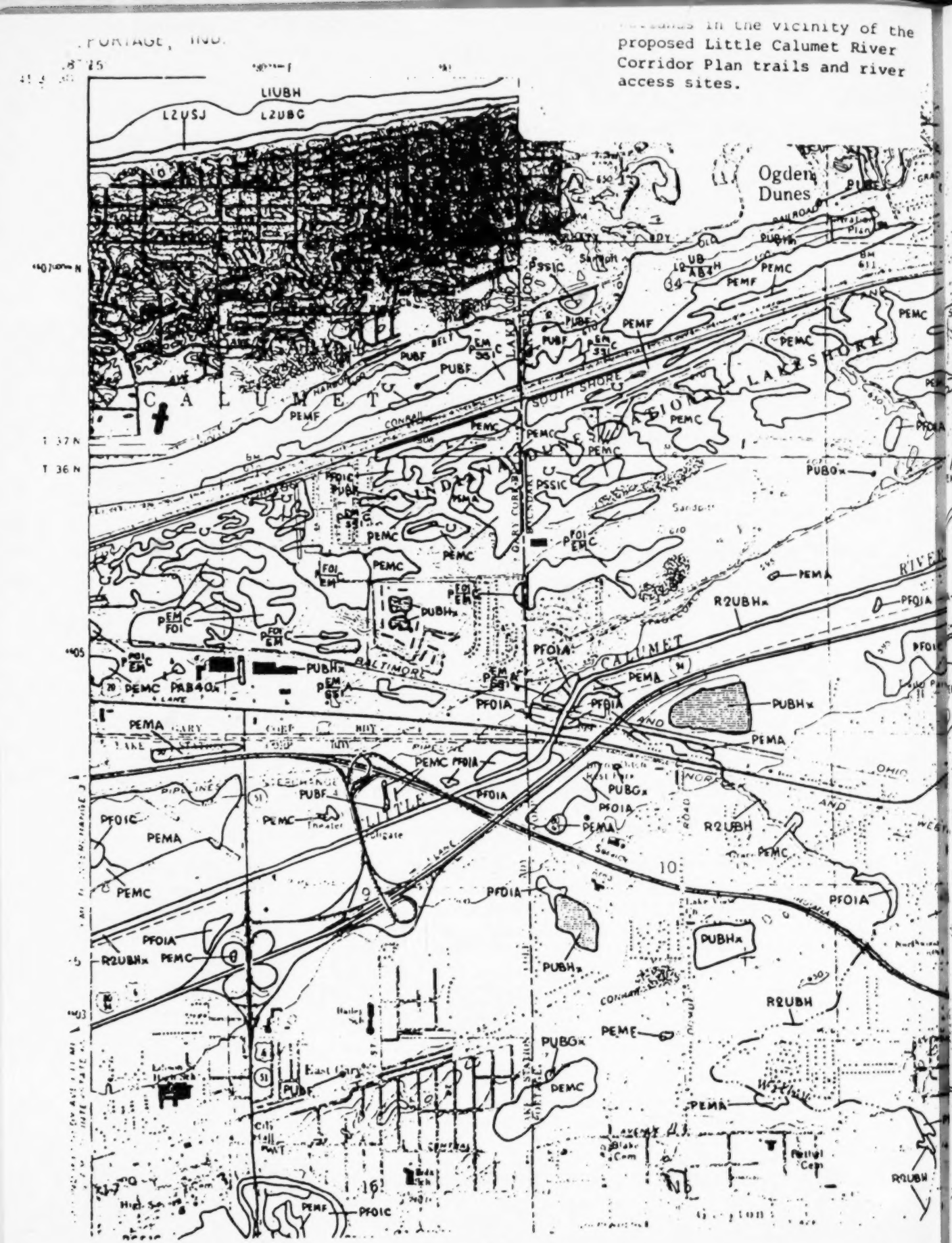
3. For this project, and for the other 2 projects reviewed in this report, the IDNR should be contacted concerning impacts to and recommendations for species listed as endangered/threatened by the State of Indiana.

We appreciate the efforts that the Park Service has made in coordination on the aforementioned projects. For further discussion, meetings, or field trips, please contact Mike Litwin at (812) 334-4268.

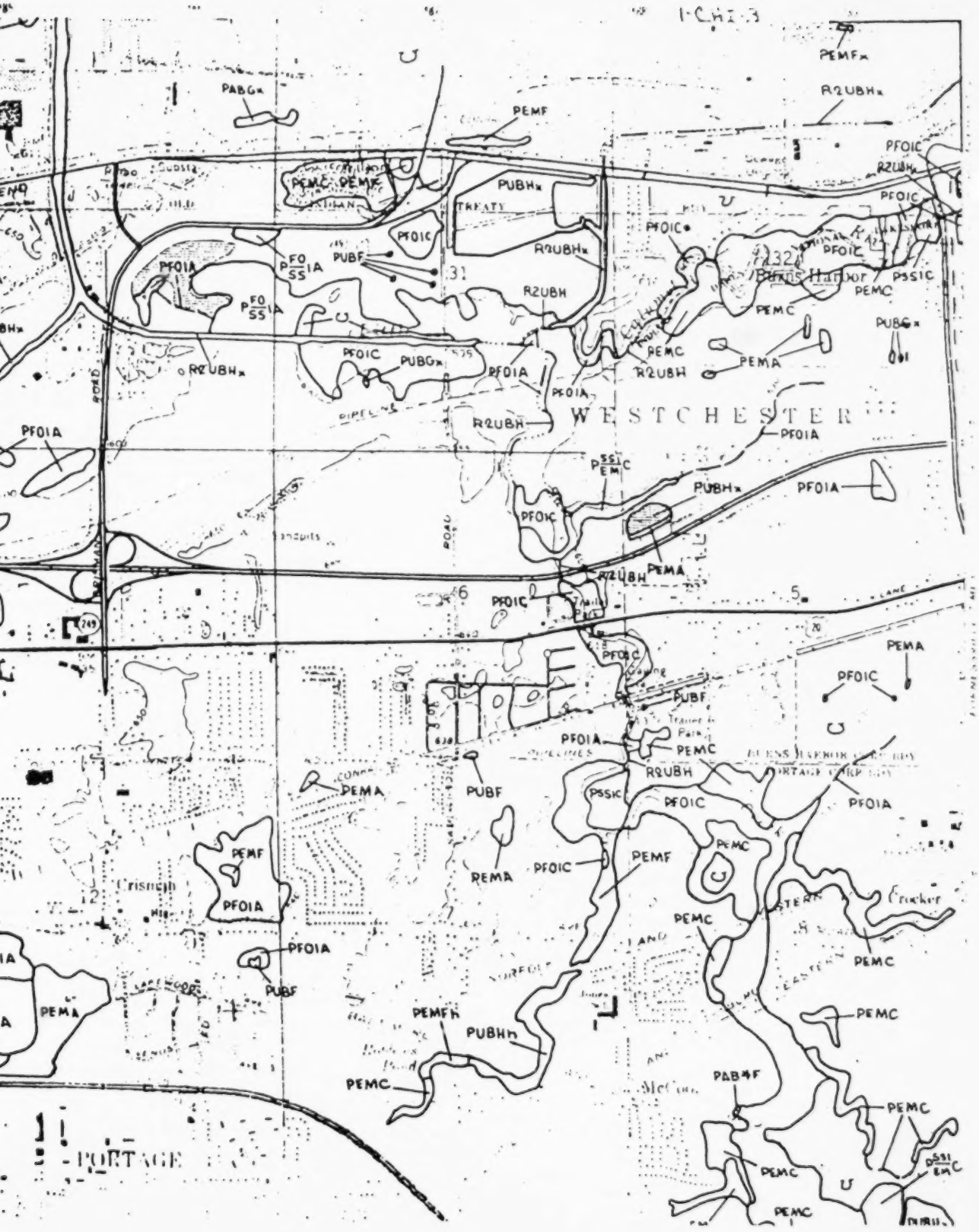
Sincerely yours,

David C. Hudak,
Supervisor

cc: Director, Indiana Div. of Fish & Wildlife, Indianapolis, IN
Indiana Dept. of Environmental Management, Indianapolis, IN
Indiana Div. of Outdoor Rec., Indianapolis, IN
Dale Engquist, IDNL, Porter, IN
National Park Service, Omaha, NB
IDNR, Div. of Nature Preserves, Indianapolis, IN



Wetlands in the vicinity of the proposed Little Calumet River Corridor Plan trails and river access sites.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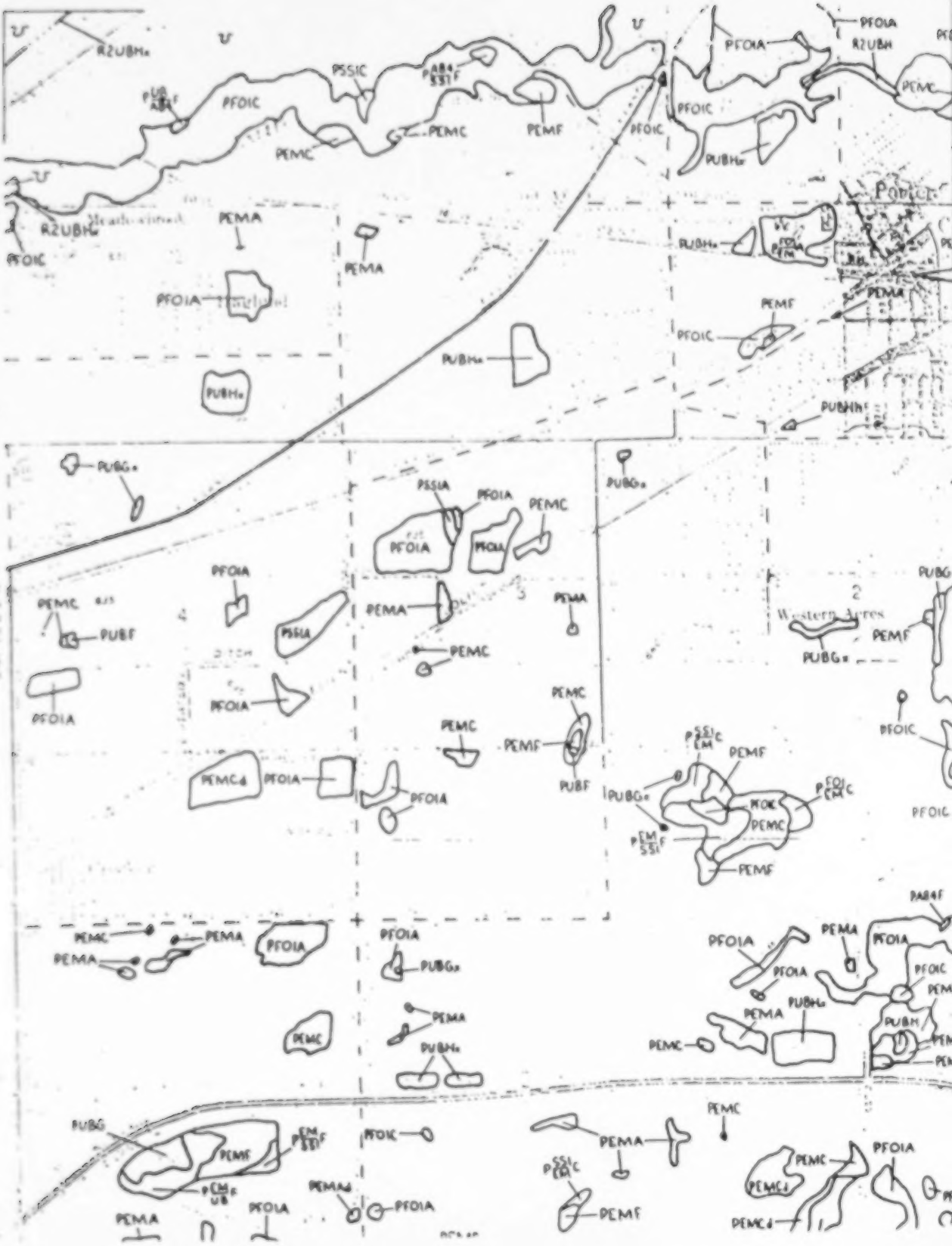

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Roberta McDougall, Interpretation Planner

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Publication services were provided by the Branch of Publications and Graphic Design of the Denver Service Center. NPS D-90A July 1991

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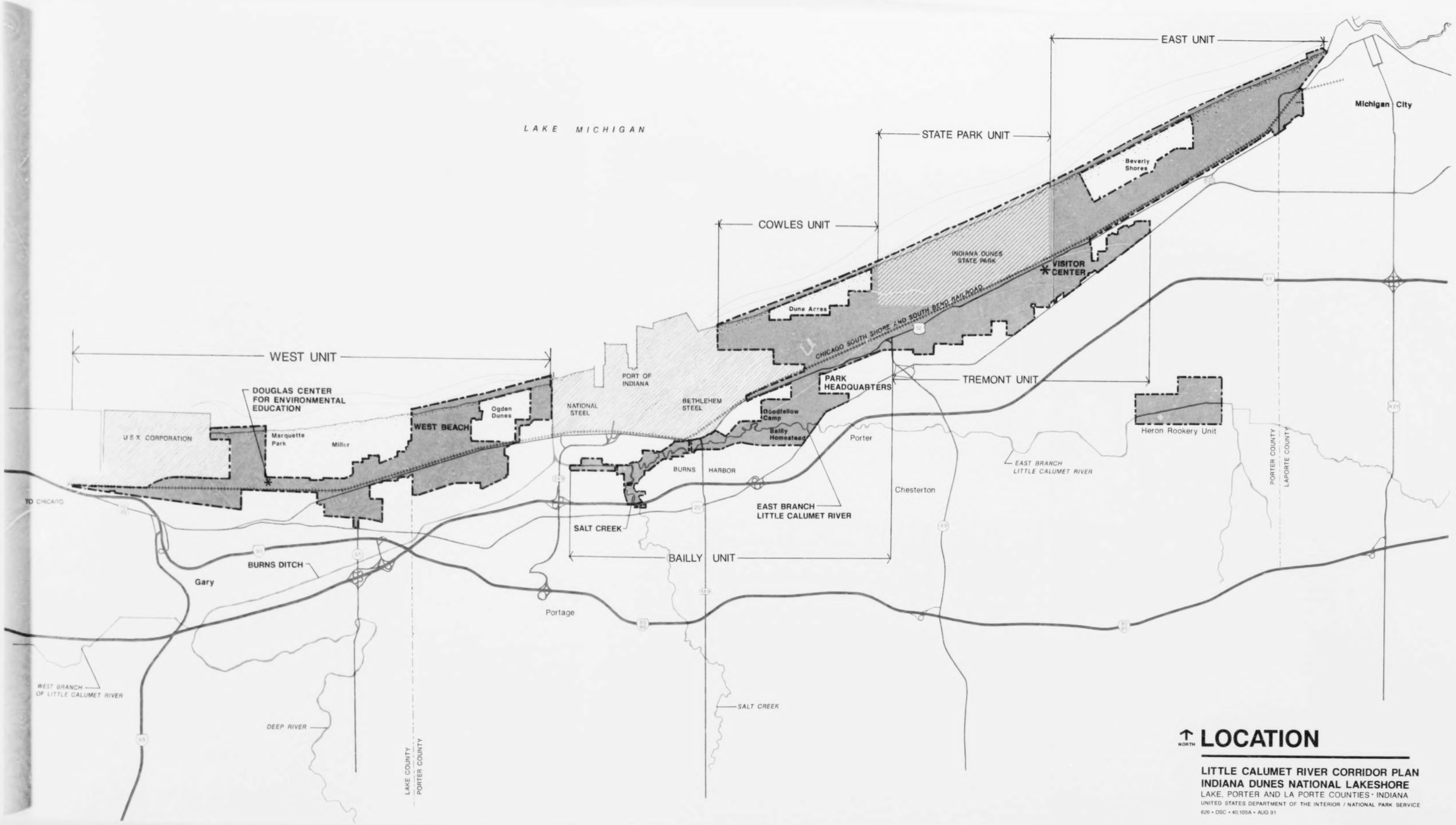

LOCATION

LITTLE CALUMET RIVER CORRIDOR PLAN
INDIANA DUNES NATIONAL LAKESHORE
LAKE, PORTER AND LA PORTE COUNTIES · INDIANA

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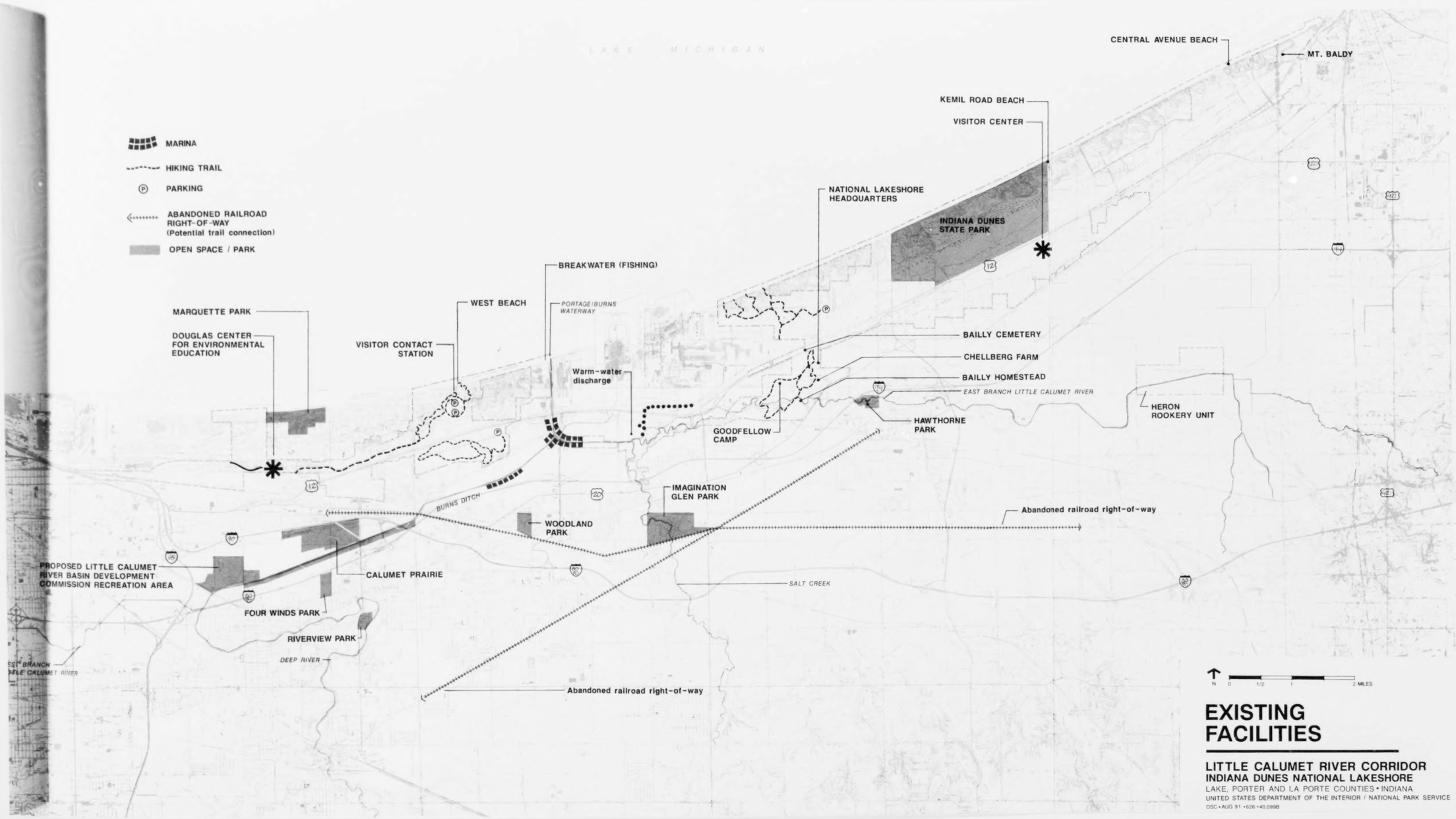

EXISTING FACILITIES

LITTLE CALUMET RIVER CORRIDOR
INDIANA DUNES NATIONAL LAKESHORE

LAKE, PORTER AND LA PORTE COUNTIES • INDIANA

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WATER / STREAM
TERRESTRIAL SHRUB / UPLAND FOREST
AGRICULTURE / GRASS
SHRUB / MARSH / FORESTED WETLANDS
SAND
RESIDENTIAL
MIXED COMMERCIAL / RESIDENTIAL
COMMERCIAL
INDUSTRIAL
NO INFORMATION AVAILABLE

N
0 1 2 MILES
0 1 2 KILOMETERS

LAND USE/ LAND COVER

LITTLE CALUMET RIVER CORRIDOR
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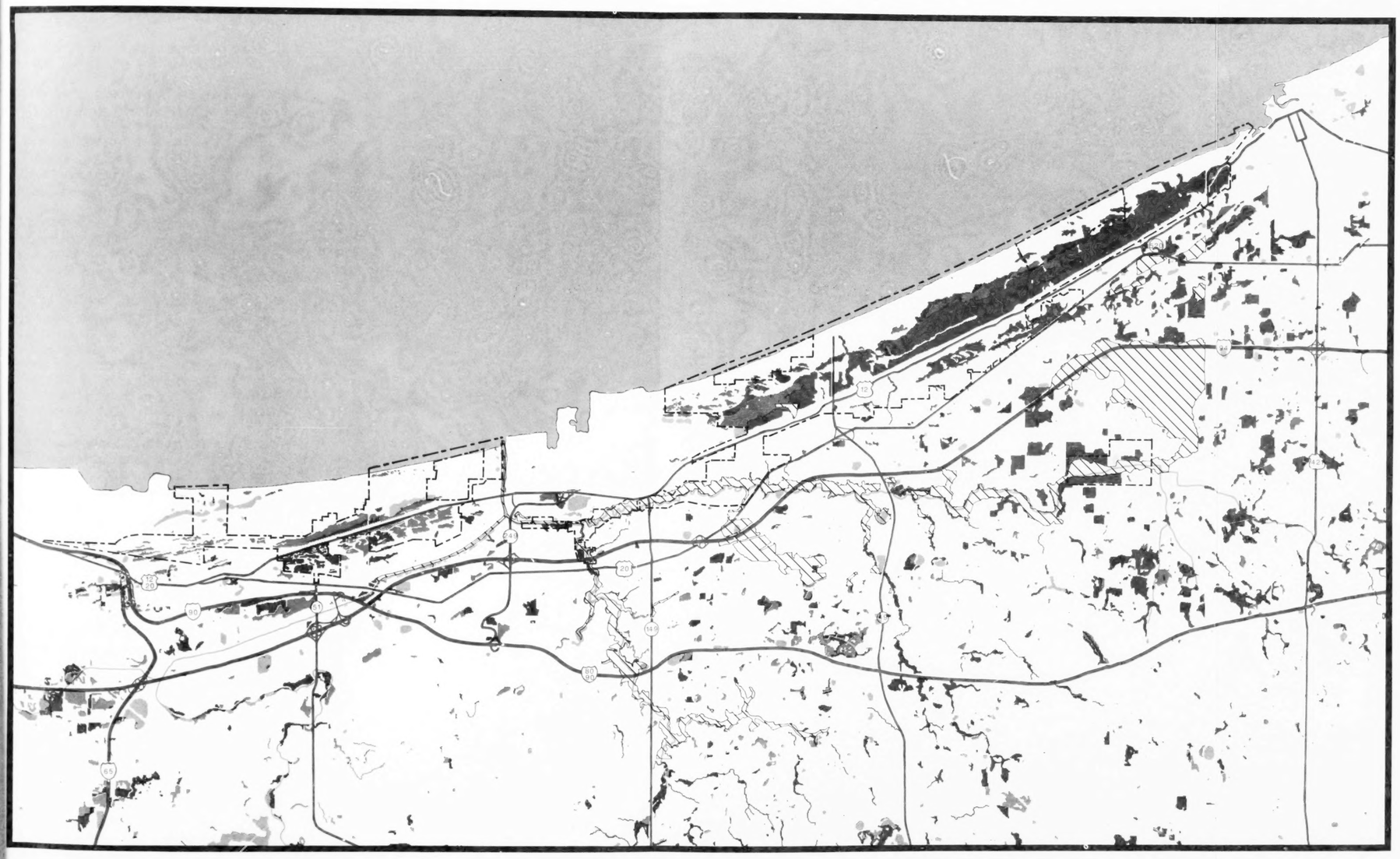

FLOODPLAINS AND WETLANDS

LITTLE CALUMET RIVER CORRIDOR
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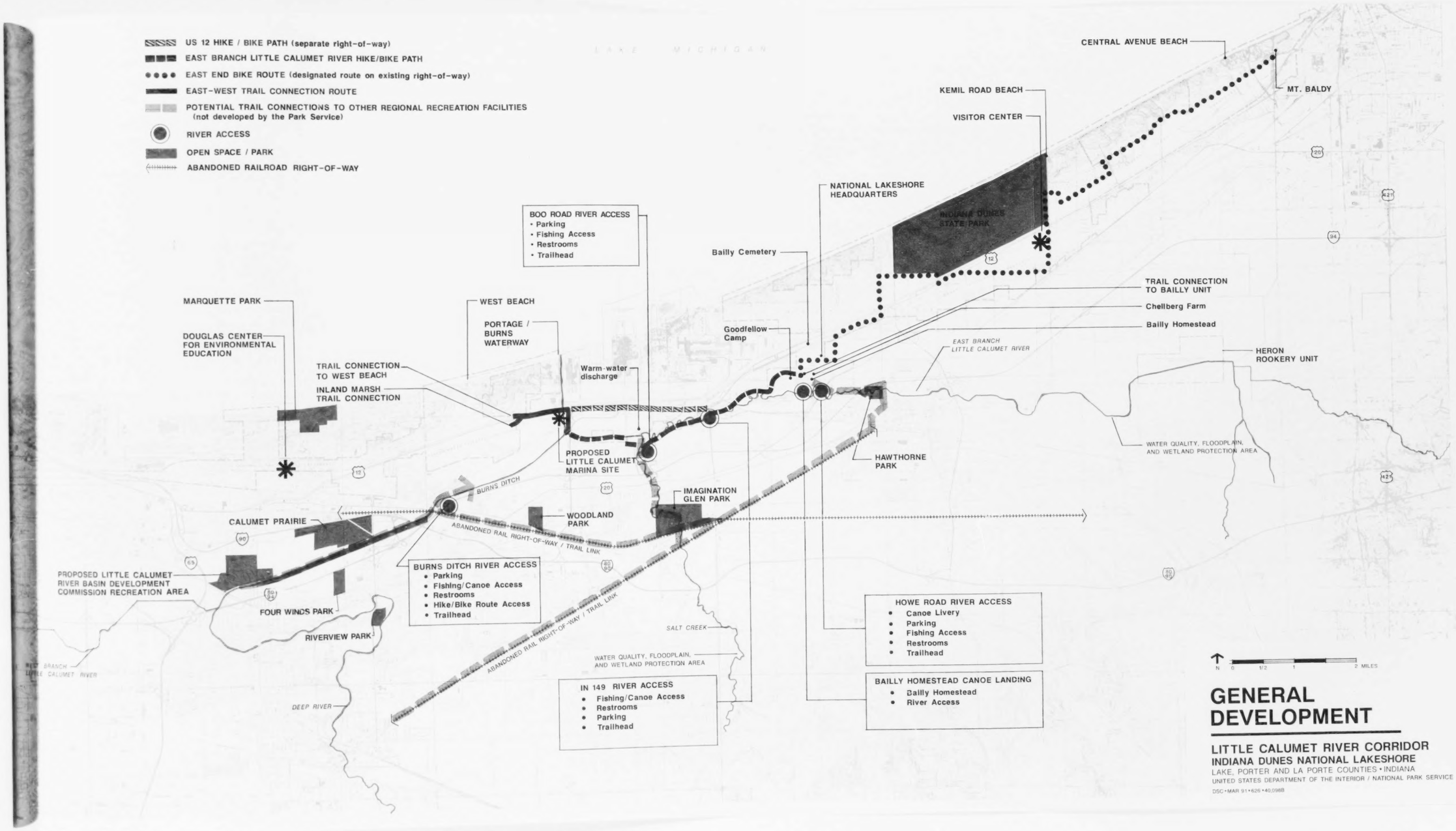

GENERAL DEVELOPMENT

LITTLE CALUMET RIVER CORRIDOR
INDIANA DUNES NATIONAL LAKESHORE

LAKE, PORTER AND LA PORTE COUNTIES • INDIANA

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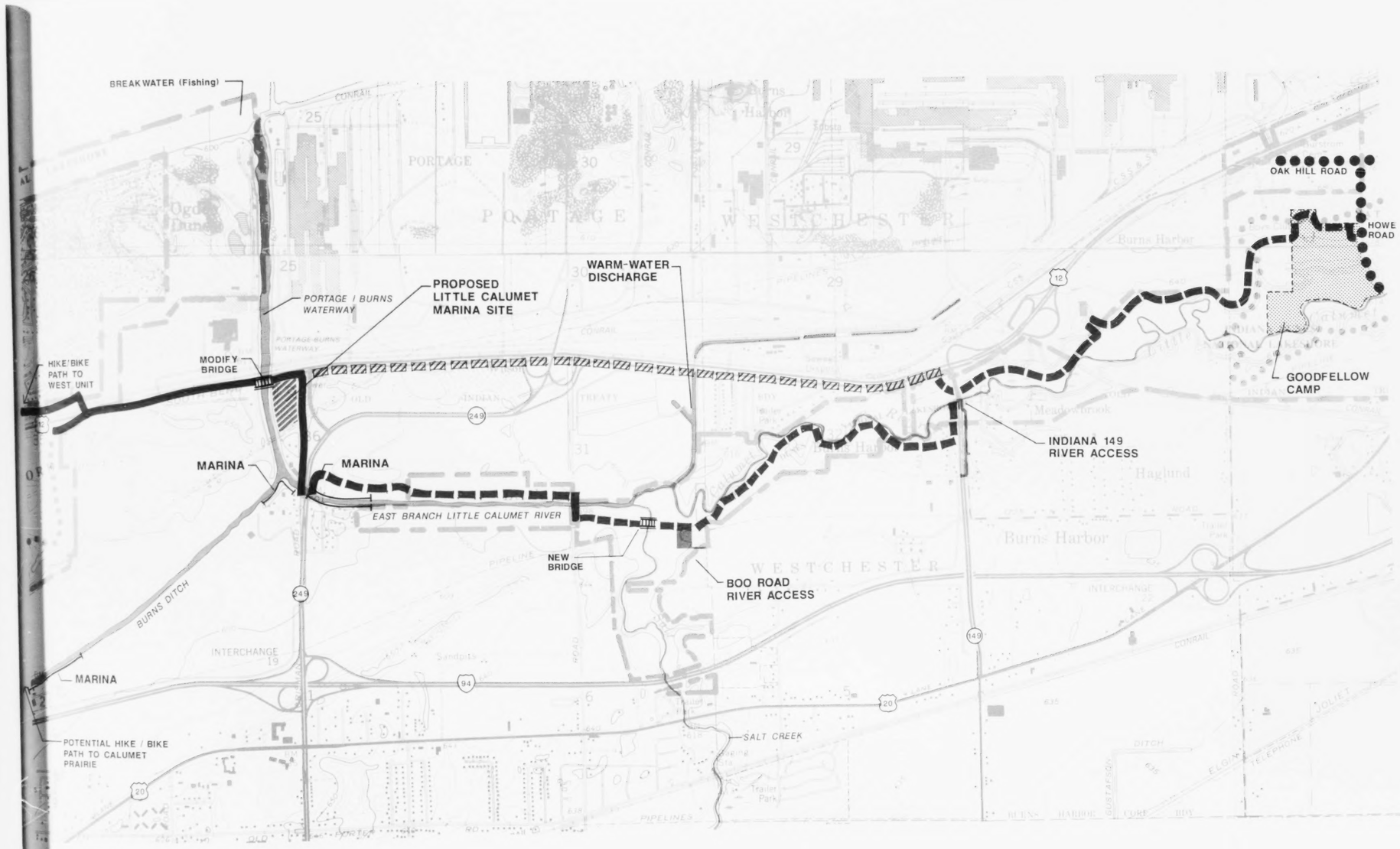

(DETAIL)

GENERAL DEVELOPMENT

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